COBRA™ Energy Recovery Units 48/50HJ004-014 with 62AQ060-300 Single-Package Rooftop Units with Energy Recovery Capability

Installation, Start-Up, and Service Supplement

IMPORTANT: This is a supplemental instruction for the 48/50HJ and the 62AQ Installation, Start-Up and Service Instructions. It is not intended to take the place of either instruction or to be a complete piece in itself.

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SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that apply.

Verify that the power source supplied to the unit matches the voltages and amperages listed on the unit rating plate.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguishers available for all brazing operations.

⚠ WARNING

Disconnect gas piping from unit when leak testing at pressure greater than $^1/_2$ psig. Pressures greater than $^1/_2$ psig will cause gas valve damage resulting in hazardous condition. If gas valve is subjected to pressure greater than $^1/_2$ psig, it *must* be replaced before use. When pressure testing field-supplied gas piping at pressures of $^1/_2$ psig or less, a unit connected to such piping must be isolated by manually closing the gas valve.

⚠ WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit and install a lock-out tag. Electrical shock could cause personal injury.

GENERAL

Carrier's factory-installed optional COBRA Energy Recovery units precondition ventilation air for the rooftop unit during winter and summer operation and recover energy from the building exhaust air. These units are designed to satisfy the higher ventilation requirements and other building codes while minimizing energy costs.

Factory installation of the energy recovery section provides the benefit of reduced field-installation time, single point power connections, and the assurance of a factory test for the complete COBRA Energy Recovery unit. The energy recovery section requires less maintenance than other energy recovery systems and can be serviced by any qualified refrigeration technician.

NOTE: Because of the location of the energy recovery section, the unit nameplate has been moved to the opposite end of the rooftop section, on the upper, right-hand part of the panel.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Book	1	1	4	4	PC 111	Catalog No. 534-80122	Printed in U.S.A.	Form 48/50HJ,62AQ-2SIS	Pg 1	9-02	Replaces: 48/50HJ,62AQ-1SIS
Tab	1a	1b	6a	6b							

INSTALLATION

Step 1 — Inspect Shipment — File a claim with the shipping company if shipment is incomplete or damaged. See Fig. 1 for a typical shipping packaging for a COBRA™ energy recovery unit.

Step 2 — Provide Unit Support

ROOF CURB — The COBRA energy recovery unit can use a full-perimeter roof curb or a standard roof curb for the rooftop section of the unit with a supplemental equipment support for the energy recovery section. The supplemental equipment support is not required. The standard rooftop unit roof curb is capable of supporting both the rooftop unit section and the energy recovery section. Assemble and install accessory roof curb in accordance with instructions shipped with curb. See Fig. 2A-4. Install insulation, cant strips, roofing felt, and counter flashing as shown. *Ductwork must be attached to curb, not to the unit. The accessory thru-the-bottom power and gas connection package must be installed before the unit is set on the roof curb.*

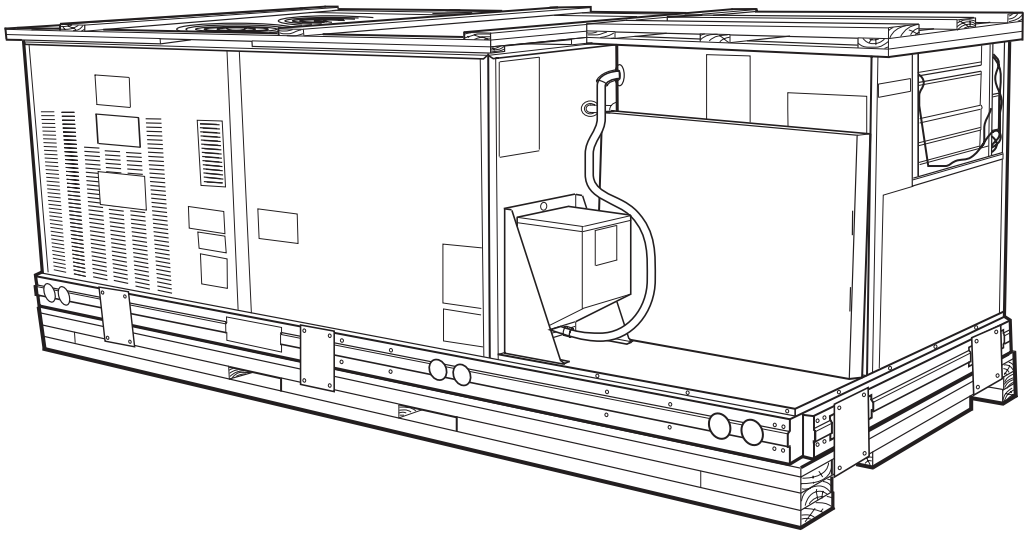


Fig. 1 — Shipping Packaging (48/50HJ004-006 Shown)

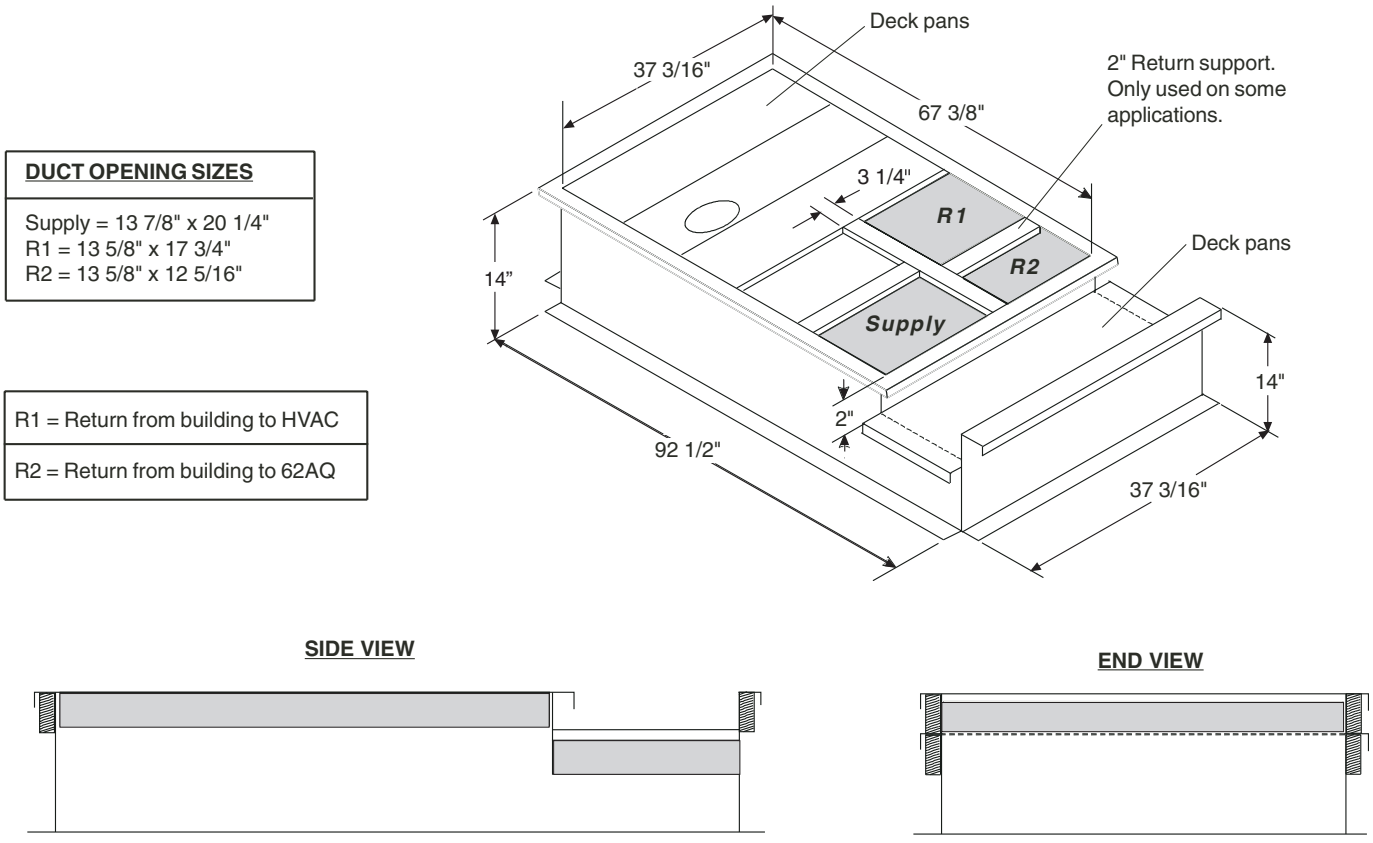


Fig. 2A — COBRA Energy Recovery Unit Full-Perimeter Roof Curb — 48/50HJ004-007 with 62AQ060,100

DUCT OPENING SIZES
Supply = 15 11/16" x 31 3/8" R1 = 15 5/16" x 29 1/16" R2 = 15 5/16" x 9"

R1 = Return from building to HVAC
R2 = Return from building to 62AQ

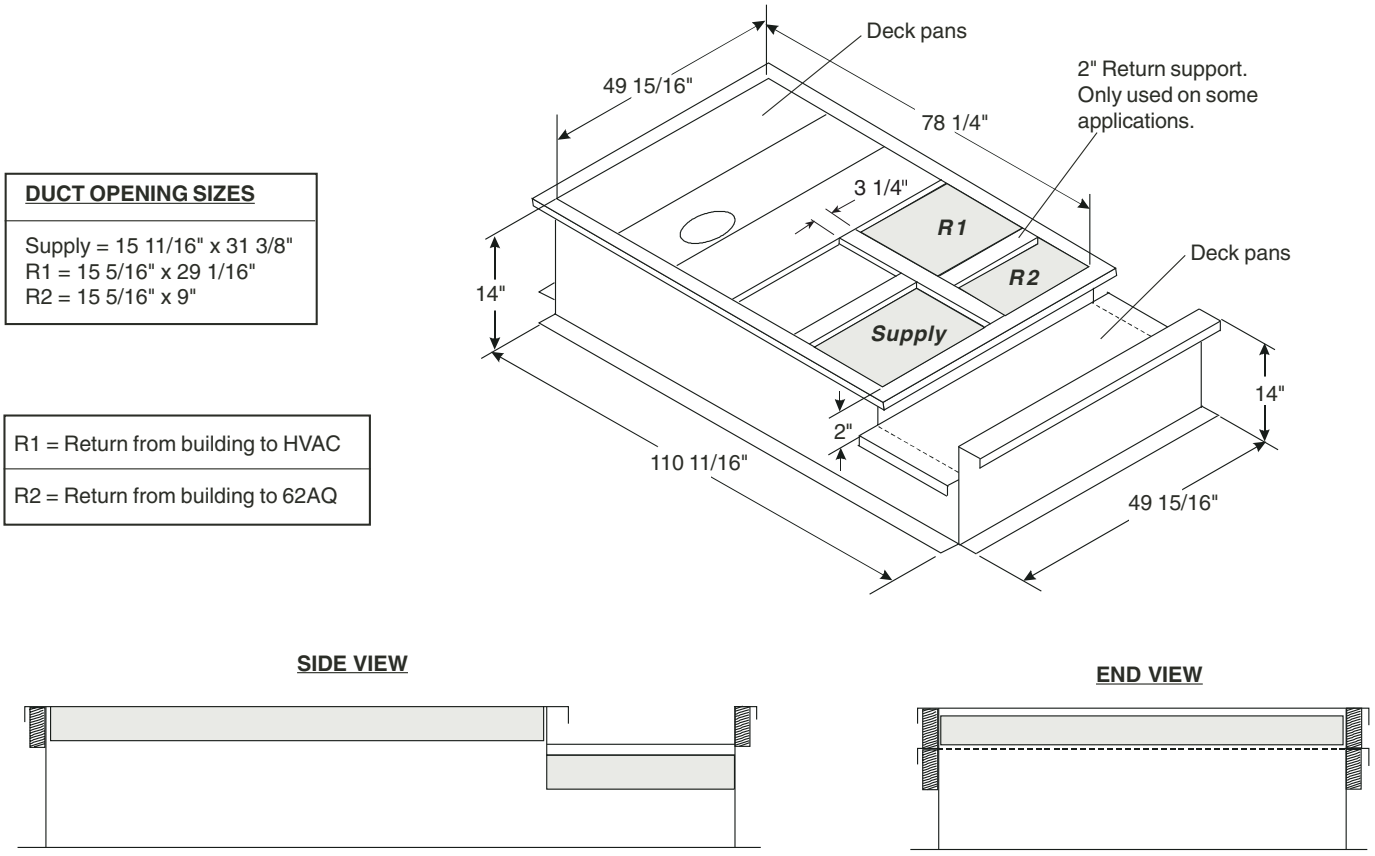


Fig. 2B — COBRA™ Energy Recovery Unit Full-Perimeter Roof Curb — 48/50HJ008-014 with 62AQ200,300

If electric control power or gas service is to be routed through the basepan, a field-installed accessory thru-the-bottom connection must be used. Attach the accessory to the basepan per the information in the accessory installation instructions. Thru-the-bottom connections must be installed before unit is set on roof.

If the combined unit roof curb is not being used, additional support may be desired under the energy recovery section of the unit. An accessory support and pad for the energy recovery section can be used. See Fig. 4. Place the protective rubber pad on the roof so that the edge near the unit is located about 6-in. from the end of the energy recovery section. Measure the distance from the bottom of energy recovery rails to the pad. Adjust the energy recovery equipment support to match the measured distance and screw into place with the 4 screws provided. See Fig. 4. Place the support underneath the energy recovery unit and on the protective rubber pad. This is done by lifting the end of the energy recovery section slightly above level and then sliding the support underneath the rails.

IMPORTANT: The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket supplied with the roof curb as shown in Fig. 3A and 3B. Improperly applied gasket can result in air leaks and poor unit performance.

Curb should be level. This is necessary for unit condensate drain to function properly. Refer to Accessory Roof Curb Installation Instructions for additional information as required.

Step 3 — Field Fabricate Ductwork — Secure all ducts to roof curb and building structure. *Do not connect ductwork to unit.* Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes. See Fig. 5A and 5B for duct dimensions.

Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier. If a plenum return is used, the return should be ducted through the roof deck to comply with applicable fire codes.

A minimum clearance is not required around ductwork.

These units are designed for a minimum continuous heating return-air temperature of 50 F (dry bulb), or an intermittent operation down to 45 F (dry bulb), such as when used with a night set-back thermostat. To operate at lower return-air temperatures, a field-supplied outdoor-air temperature control must be used to initiate both stages of heat when the temperature is below 45 F. Indoor comfort may be compromised when these lower air temperatures are used with insufficient heating temperature rise.

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	1′-9 11/16″ [551]	1′-4″ [406]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7]
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A00	1′-2″ [356]	48/50HJ 004-007
CRRFCURB002A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance: 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 002A00 are for thru-the-curb type gas. Packages CRBTMPWR003A00 and 004A00 are for thru-the-bottom type gas connections.

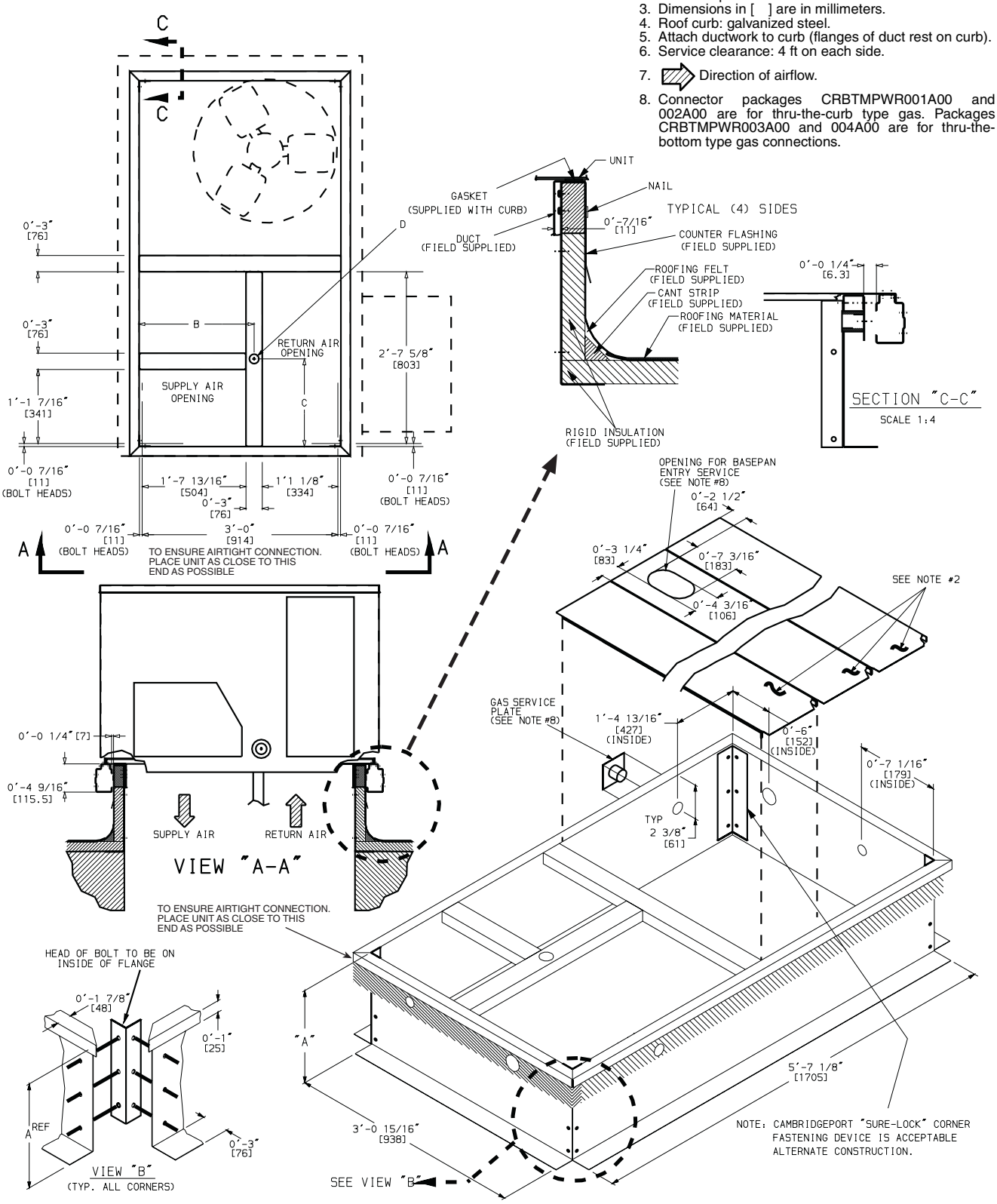


Fig. 3A — Roof Curb Details (48/50HJ004-007 Section Only)

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL
CRBTMPWR001A00	2′-8 7/16″ [827]	1′-10 15/16″ [583]	1 3/4″ [44.5]	3/4″ [19] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR002A00					1 1/4″ [31.7]	
CRBTMPWR003A00				1/2″ [12.7] NPT	3/4″ [19] NPT	1/2″ [12.7] NPT
CRBTMPWR004A00				3/4″ [19] NPT	1 1/4″ [31.7]	

ROOF CURB ACCESSORY	"A"	UNIT SIZE 48/50HJ
CRRFCURB003A00	1′-2″ [356]	008-014
CRRFCURB004A00	2′-0″ [610]	

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Insulated panels: 1-in. thick polyurethane foam, 1 3/4 lb density.
3. Dimensions in [ ] are in millimeters.
4. Roof curb: 16-gage steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow.
8. Connector packages CRBTMPWR001A00 and 2A00 are for thru-the-curb gas type. Packages CRBTMPWR003A00 and 4A00 are for thru-the-bottom type gas connections.

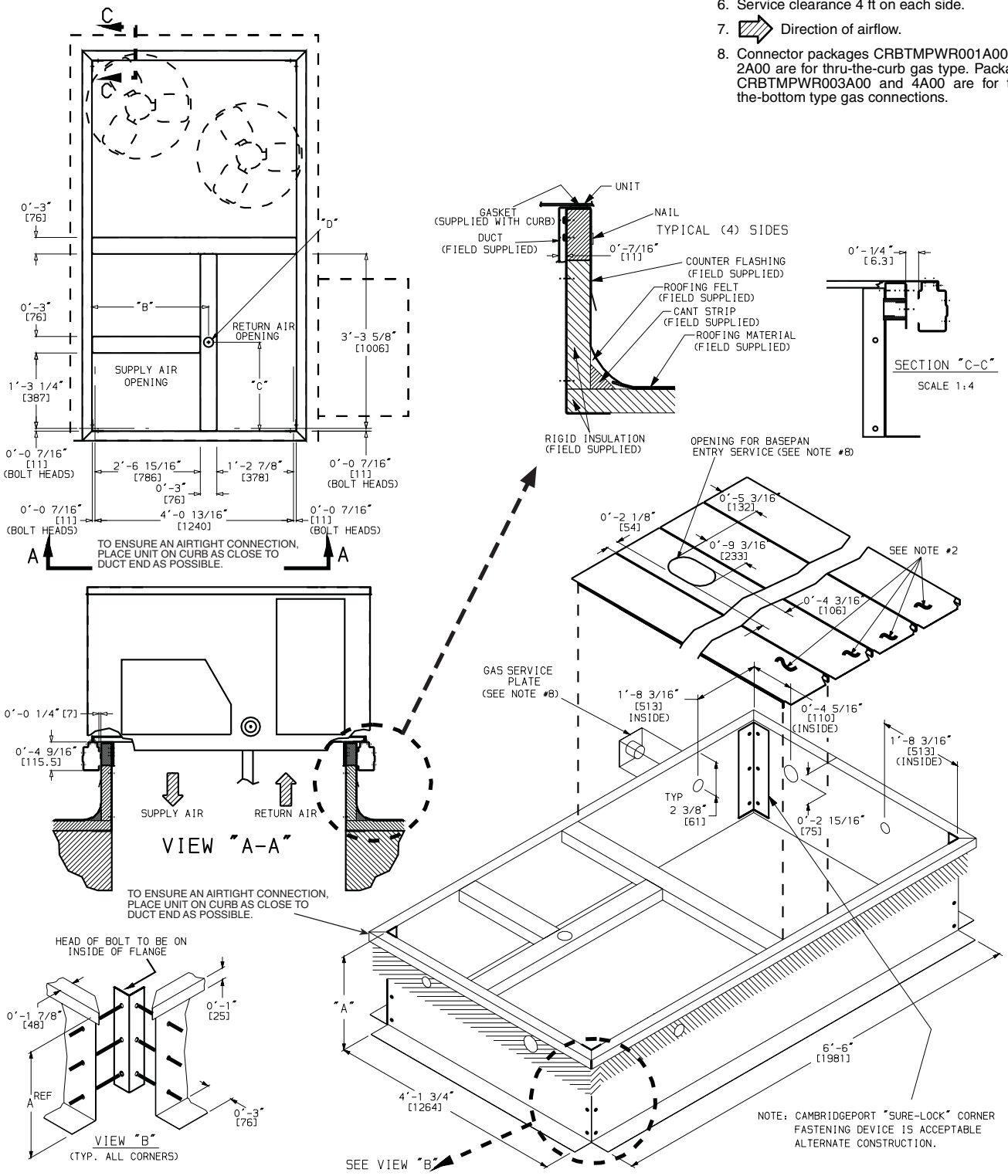
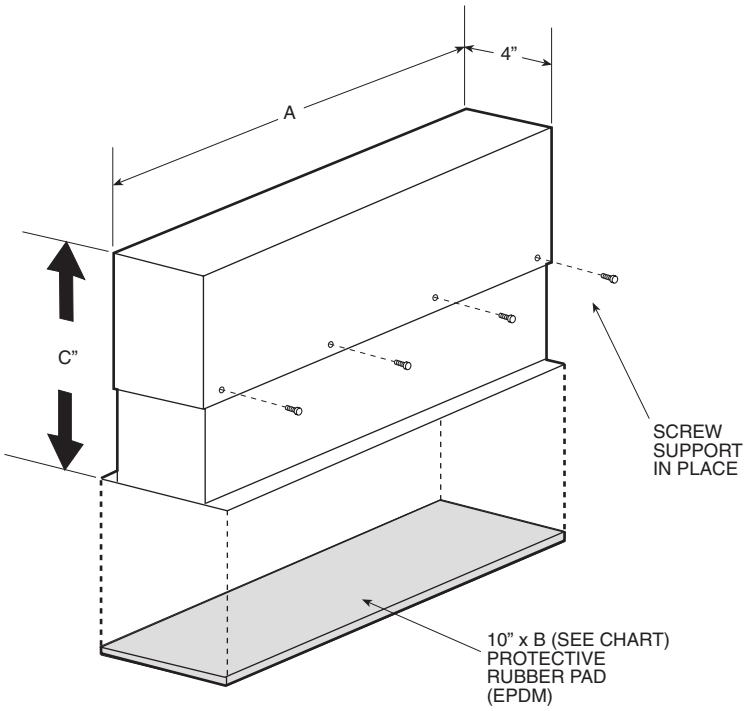


Fig. 3B — Roof Curb Details (48/50HJ008-014 Section Only)



UNIT SIZE	EQUIPMENT SUPPORT PART NUMBER	DIMENSIONS (in.)		
		A	B	C
3-6 Ton	CRAQSUPT001A00	36.9	40	8 to 14
	CRAQSUPT002A00	36.9	40	14 to 24
7 1/2-12 1/2 Ton	CRAQSUPT003A00	49.7	54	8 to 14
	CRAQSUPT004A00	49.7	54	14 to 24

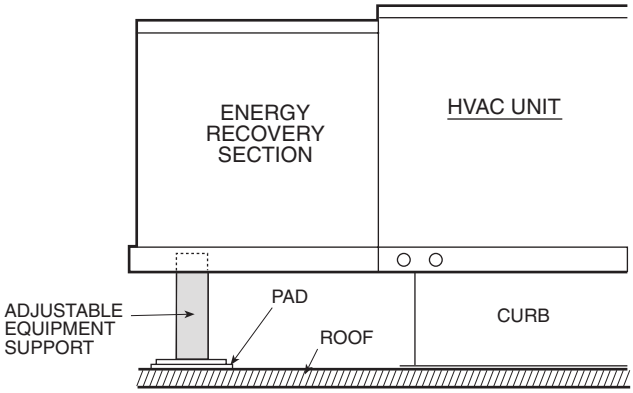


Fig. 4 — Supplemental Energy Recovery Section Equipment Support

Step 4 — Rig and Place Unit — Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit. Rollers may be used to move unit across a roof. Remove the bottom wooden skids that are under the unit by removing the wooden plates that hold the bottom wooden frame to the unit. Level by using unit frame as a reference. Lifting holes are provided in base rails as shown in Fig. 6A and 6B. Refer to rigging instructions on unit.

⚠ CAUTION

All panels must be in place when rigging.

POSITIONING — Maintain clearance around and above unit to provide minimum distance from combustible materials, proper airflow, and service access. A properly positioned unit will have the following clearances between unit and roof curb: 1/4-in. clearance between roof curb and base rails on each side and duct end of unit; 1/4-in. clearance between roof curb and condenser coil end of unit.

Do not install unit in an indoor location. Do not locate unit air inlets near exhaust vents or other sources of contaminated air.

Be sure that unit is installed such that snow will not block the combustion intake or flue outlet.

Unit may be installed directly on wood flooring or on Class A, B, or C roof-covering material when roof curb is used.

Although unit is weatherproof, guard against water from higher level runoff and overhangs.

Flue vent discharge must have a minimum horizontal clearance of 4 ft from electric and gas meters, gas regulators, and gas relief equipment.

Minimum distance between unit and other electrically live parts is 48 inches.

Flue gas can deteriorate building materials. Orient unit such that flue gas will not affect building materials. Locate mechanical draft system flue assembly at least 48 in. from an adjacent building or combustible material.

Adequate combustion- and ventilation-air space must be provided for proper operation of this equipment. Be sure that installation complies with all local codes and Section 5.3, Air for Combustion and Ventilation, NFGC (National Fuel Gas Code), and ANSI (American National Standards Institute) Z223.1, and NFPA (National Fire Protection Association) 54 TIA-54-84-1. In Canada, installation must be in accordance with the CAN1-B149 installation codes for gas burning appliances.

After unit is in position, remove rigging skids and shipping materials.

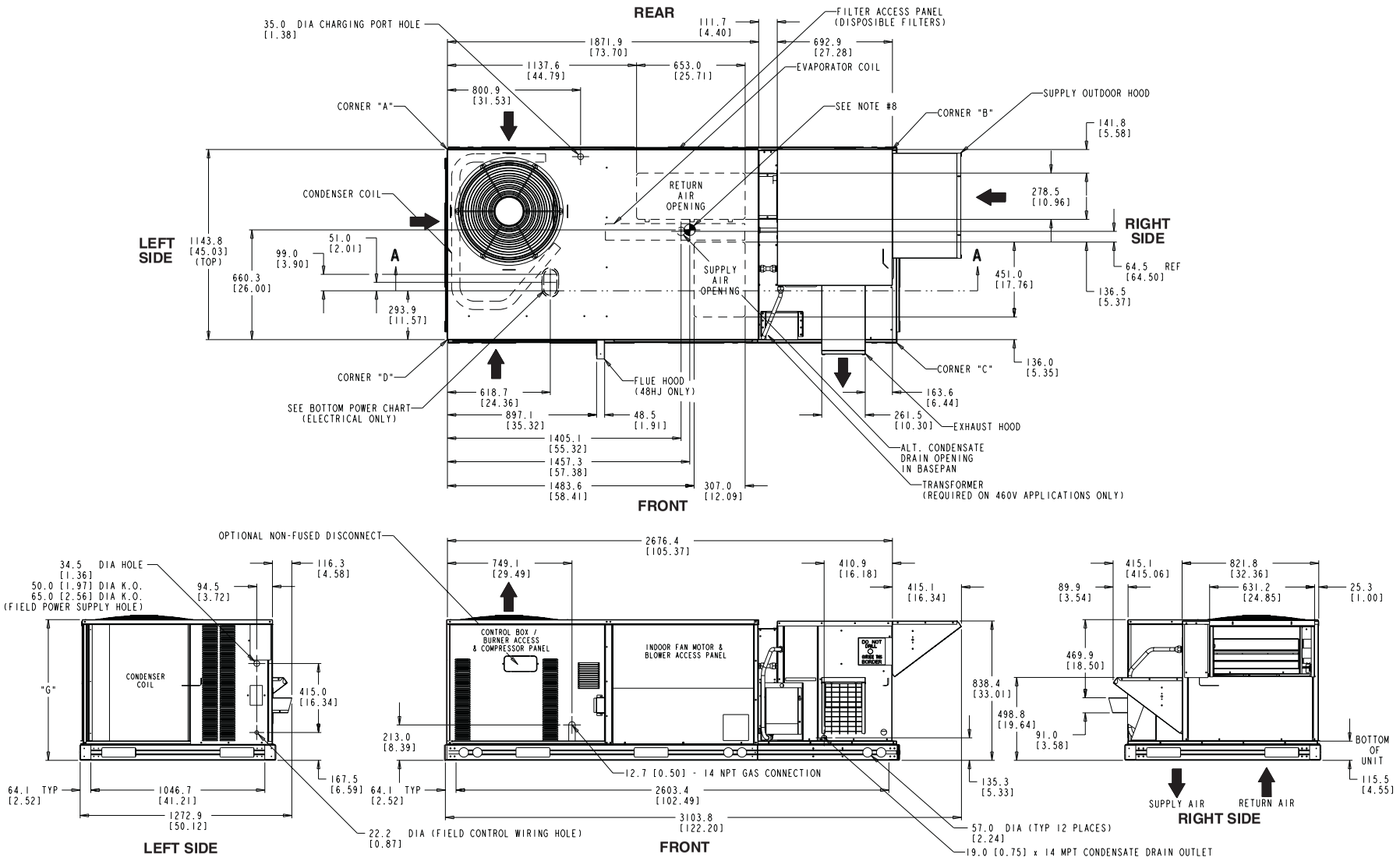


Fig. 5A — Base Unit Dimensions — COBRA™ Energy Recovery Unit — 48/50HJ004-007 with 62AQ060,100

SINGLE ZONE ELECTRIC COOLING WITH GAS HEAT													
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT "A"		CORNER WEIGHT "B"		CORNER WEIGHT "C"		CORNER WEIGHT "D"		UNIT HEIGHT "G"	
		LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	IN	MM
48HJ*004 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	890	404	234	106	280	127	205	93	171	78	33.33	846.5
48HJ*004 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	905	411	238	108	284	129	208	94	174	79	33.33	846.5
48HJ*005 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	900	409	237	107	283	128	207	94	173	79	33.33	846.5
48HJ*005 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	915	415	241	109	288	130	211	96	176	80	33.33	846.5
48HJ*006 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	920	418	242	110	289	131	212	96	177	80	33.33	846.5
48HJ*006 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	935	425	246	112	294	133	215	98	180	82	33.33	846.5
48HJ*007 w/62AQ060	208/230-3-60, 460-3-60	995	452	262	119	313	142	229	104	192	87	41.24	1047.4
48HJ*007 w/62AQ100	208/230-3-60, 460-3-60	1010	459	266	120	317	144	232	105	194	88	41.24	1047.4

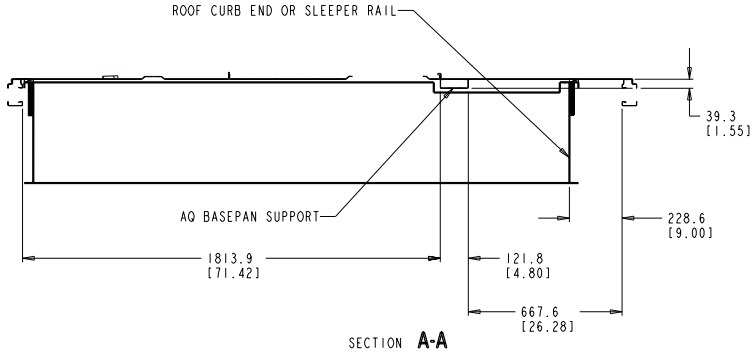
SINGLE ZONE ELECTRIC COOLING													
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT "A"		CORNER WEIGHT "B"		CORNER WEIGHT "C"		CORNER WEIGHT "D"		UNIT HEIGHT "G"	
		LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	IN	MM
50HJ004 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	795	361	209	95	250	113	183	83	153	69	33.33	846.5
50HJ004 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	810	368	213	97	255	115	186	85	156	71	33.33	846.5
50HJ005 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	805	365	212	96	253	115	185	84	155	70	33.33	846.5
50HJ005 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	820	372	216	98	258	117	189	86	158	72	33.33	846.5
50HJ006 w/62AQ060	208/230-1-60, 208/230-3-60, 460-3-60	825	375	217	98	259	118	190	86	159	72	33.33	846.5
50HJ006 w/62AQ100	208/230-1-60, 208/230-3-60, 460-3-60	840	381	221	100	264	120	193	88	162	73	33.33	846.5
50HJ007 w/62AQ060	208/230-3-60, 460-3-60	880	400	231	105	277	125	203	92	169	77	41.24	1047.4
50HJ007 w/62AQ100	208/230-3-60, 460-3-60	895	407	235	107	281	128	206	93	172	78	41.24	1047.4

NOTES:
1. DIMENSIONS IN [ ] ARE IN INCHES.
2. ⊕ CENTER OF GRAVITY.
3. ➡ DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. HJ - MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL).:
   a. BETWEEN UNIT, FLUE SIDE AND COMBUSTIBLE SURFACES, 48 INCHES. 18 INCHES WHEN USING ACCESSORY FLUE DISCHARGE DEFLECTOR.
   b. BOTTOM OF UNIT TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 1 INCH. BOTTOM OF BASE RAIL TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES.
   c. CONDENSER COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
   d. OVERHEAD, 60 INCHES TO ASSURE PROPER CONDENSER FAN OPERATION.
   e. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
   f. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.
   g. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
   h. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES WHEN THE ALTERNATE CONDENSATE DRAIN IS USED.
   AQ - MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL.:)
   a. BETWEEN UNIT (CONTROL/EXHAUST SIDE) AND UNDGROUNDED SURFACES, 36 INCHES AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES.
   b. FILTER ACCESS SIDE, 30 INCHES. SUPPLY AIR INTAKE, 36 INCHES. UNIT TOP, 0 INCHES. EXHAUST AIR SIDE 36 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AND COMBUSTION SIDE AS STATED IN NOTE #5a, b AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL IF SET ON BASE RAIL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-6" [457] UP FROM THE BOTTOM OF THE BASE RAIL.

BOTTOM POWER CHART:
THESE HOLES REQ'D FOR USE
WITH ACCESSORY PACKAGES -
CRBTMPWR001A00, 3A00 12.7 [0.50], 19.0 [0.75]
OR
CRBTMPWR002A00, 4A00 12.7 [0.50], 31.8 [1.25]

THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
12.7 [0.50]	24V	22.2 [0.88]
19.0 [0.75]	POWER *	28.4 [1.12]
31.7 [1.25]	POWER *	44.4 [1.75]
(003) 12.7 [0.50] FPT	GAS	31.8 [1.25]
(004) 19.0 [0.75] FPT	GAS	41.3 [1.62]

* - SELECT EITHER 19.0 [0.75] OR 31.8 [1.25] FOR POWER, DEPENDING ON WIRE SIZE.



SECTION A-A
(VIEW FOR CURB/SLEEPER RAIL)

Fig. 5A — Base Unit Dimensions — COBRA™ Energy Recovery Unit — 48/50HJ004-007 with 62AQ060,100 (cont)

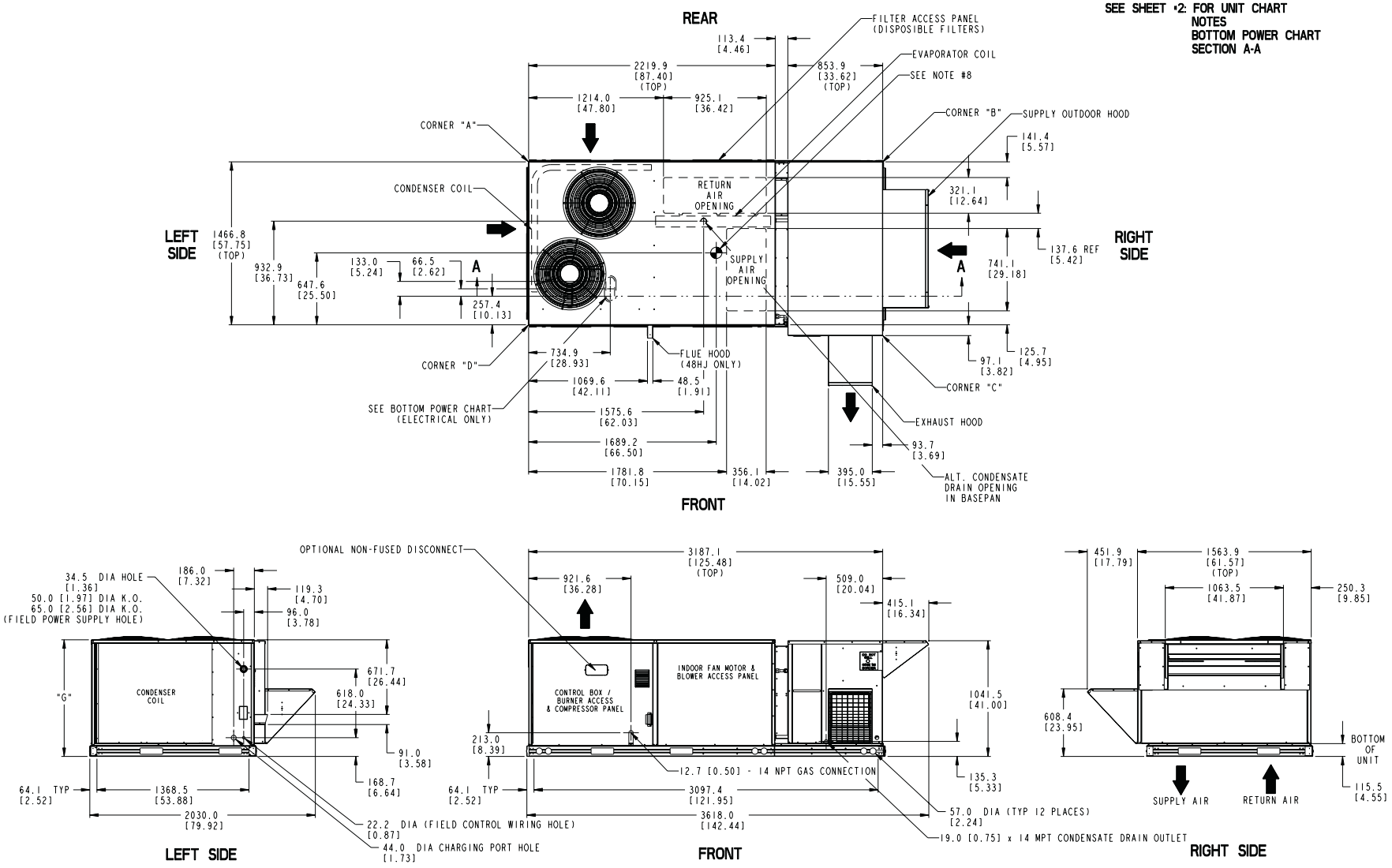


Fig. 5B — Base Unit Dimensions — COBRA™ Energy Recovery Unit — 48/50HJ008-014 with 62AQ200,300

SINGLE ZONE ELECTRIC COOLING WITH GAS HEAT													
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT "A"		CORNER WEIGHT "B"		CORNER WEIGHT "C"		CORNER WEIGHT "D"		UNIT HEIGHT "G"	
		LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	IN	MM
48HJ*008 w/62AQ200	208/230-3-60, 460-3-60	1310	595	272	123	307	139	388	176	344	156	42.12	1070
48HJ*008 w/62AQ300	208/230-3-60, 460-3-60	1355	616	281	128	317	144	401	182	356	161	42.12	1070
48HJ*009 w/62AQ200	208/230-3-60, 460-3-60	1315	597	273	124	308	140	389	177	345	157	42.12	1070
48HJ*009 w/62AQ300	208/230-3-60, 460-3-60	1360	618	282	128	318	144	403	183	357	162	42.12	1070
48HJ*012 w/62AQ200	208/230-3-60, 460-3-60	1400	636	291	132	328	149	414	188	367	167	50.12	1273
48HJ*012 w/62AQ300	208/230-3-60, 460-3-60	1445	657	300	136	338	153	428	194	379	172	50.12	1273
48HJ*014 w/62AQ200	208/230-3-60, 460-3-60	1440	655	299	136	337	153	426	193	378	171	50.12	1273
48HJ*014 w/62AQ300	208/230-3-60, 460-3-60	1485	675	308	140	347	158	440	199	390	177	50.12	1273

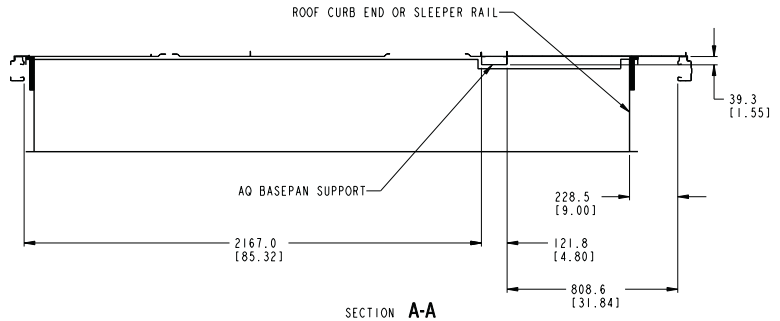
SINGLE ZONE ELECTRIC COOLING													
UNIT	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CORNER WEIGHT "A"		CORNER WEIGHT "B"		CORNER WEIGHT "C"		CORNER WEIGHT "D"		UNIT HEIGHT "G"	
		LBS	KG	LBS	KG	LBS	KG	LBS	KG	LBS	KG	IN	MM
50HJ008 w/62AQ200	208/230-3-60, 460-3-60	1240	564	257	117	290	132	367	166	325	148	42.12	1070
50HJ008 w/62AQ300	208/230-3-60, 460-3-60	1285	584	267	121	301	136	380	173	337	153	42.12	1070
50HJ009 w/62AQ200	208/230-3-60, 460-3-60	1245	566	258	117	291	132	369	167	327	148	42.12	1070
50HJ009 w/62AQ300	208/230-3-60, 460-3-60	1290	586	268	121	302	137	382	173	339	154	42.12	1070
50HJ012 w/62AQ200	208/230-3-60, 460-3-60	1325	602	275	125	310	141	392	178	348	158	50.12	1273
50HJ012 w/62AQ300	208/230-3-60, 460-3-60	1370	623	284	129	321	145	406	184	360	163	50.12	1273
50HJ014 w/62AQ200	208/230-3-60, 460-3-60	1365	620	283	128	319	145	404	183	358	162	50.12	1273
50HJ014 w/62AQ300	208/230-3-60, 460-3-60	1410	641	293	133	330	150	417	189	370	168	50.12	1273

NOTES:
1. DIMENSIONS IN [ ] ARE IN INCHES.
2. ⊕ CENTER OF GRAVITY.
3. ➡ DIRECTION OF AIR FLOW.
4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.
5. HJ - MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL).:
   a. BETWEEN UNIT, FLUE SIDE AND COMBUSTIBLE SURFACES, 48 INCHES. 18 INCHES WHEN USING ACCESSORY FLUE DISCHARGE DEFLECTOR.
   b. BOTTOM OF UNIT TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 1 INCH. BOTTOM OF BASE RAIL TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES.
   c. CONDENSER COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.
   d. OVERHEAD, 60 INCHES TO ASSURE PROPER CONDENSER FAN OPERATION.
   e. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC.
   f. BETWEEN UNIT AND UNGROUNDED SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.
   g. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.
   h. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES WHEN THE ALTERNATE CONDENSATE DRAIN IS USED.
   AQ - MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL.:)
   a. BETWEEN UNIT (CONTROL/EXHAUST SIDE) AND UNDGROUNDED SURFACES, 36 INCHES AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES.
   b. FILTER ACCESS SIDE, 30 INCHES.
      SUPPLY AIR INTAKE, 36 INCHES.
      UNIT TOP, 0 INCHES.
      EXHAUST AIR SIDE 36 INCHES.
6. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AND COMBUSTION SIDE AS STATED IN NOTE #5a, b AND c, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL IF SET ON BASE RAIL.
8. THE VERTICAL CENTER OF GRAVITY IS 1'-6" [457] UP FROM THE BOTTOM OF THE BASE RAIL.

BOTTOM POWER CHART:
THESE HOLES REQ'D FOR USE
WITH ACCESSORY PACKAGES -
CRBTMPWR001A00, 3A00 12.7 [0.50], 19.0 [0.75]
OR
CRBTMPWR002A00, 4A00 12.7 [0.50], 31.8 [1.25]

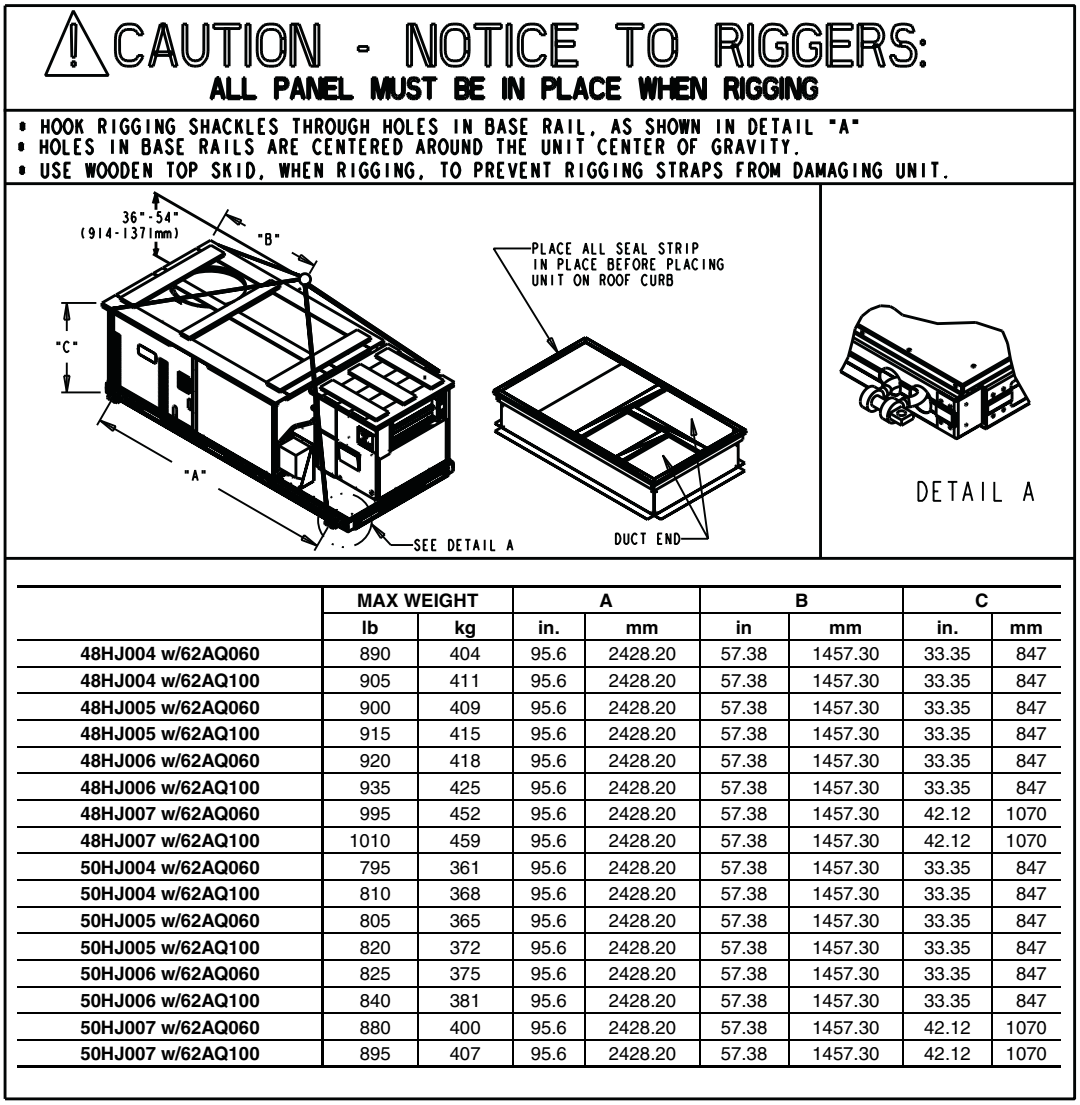
THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
12.7 [0.50]	24V	22.2 [0.88]
19.0 [0.75]	POWER *	28.4 [1.12]
31.7 [1.25]	POWER *	44.4 [1.75]
(003) 12.7 [0.50] FPT	GAS	31.8 [1.25]
(004) 19.0 [0.75] FPT	GAS	41.3 [1.62]

* - SELECT EITHER 19.0 [0.75] OR 31.8 [1.25] FOR POWER, DEPENDING ON WIRE SIZE.



SECTION **A-A**
SCALE 3:32
(VIEW FOR CURB/SLEEPER RAIL)

Fig. 5B — Base Unit Dimensions — COBRA™ Energy Recovery Unit — 48/50HJ008-014 with 62AQ200,300 (cont)



	MAX WEIGHT		A		B		C	
	lb	kg	in.	mm	in	mm	in.	mm
48HJ004 w/62AQ060	890	404	95.6	2428.20	57.38	1457.30	33.35	847
48HJ004 w/62AQ100	905	411	95.6	2428.20	57.38	1457.30	33.35	847
48HJ005 w/62AQ060	900	409	95.6	2428.20	57.38	1457.30	33.35	847
48HJ005 w/62AQ100	915	415	95.6	2428.20	57.38	1457.30	33.35	847
48HJ006 w/62AQ060	920	418	95.6	2428.20	57.38	1457.30	33.35	847
48HJ006 w/62AQ100	935	425	95.6	2428.20	57.38	1457.30	33.35	847
48HJ007 w/62AQ060	995	452	95.6	2428.20	57.38	1457.30	42.12	1070
48HJ007 w/62AQ100	1010	459	95.6	2428.20	57.38	1457.30	42.12	1070
50HJ004 w/62AQ060	795	361	95.6	2428.20	57.38	1457.30	33.35	847
50HJ004 w/62AQ100	810	368	95.6	2428.20	57.38	1457.30	33.35	847
50HJ005 w/62AQ060	805	365	95.6	2428.20	57.38	1457.30	33.35	847
50HJ005 w/62AQ100	820	372	95.6	2428.20	57.38	1457.30	33.35	847
50HJ006 w/62AQ060	825	375	95.6	2428.20	57.38	1457.30	33.35	847
50HJ006 w/62AQ100	840	381	95.6	2428.20	57.38	1457.30	33.35	847
50HJ007 w/62AQ060	880	400	95.6	2428.20	57.38	1457.30	42.12	1070
50HJ007 w/62AQ100	895	407	95.6	2428.20	57.38	1457.30	42.12	1070

Fig. 6A — Rigging Label — COBRA™ Energy Recovery Unit — Sizes 48/50HJ004-007

Step 5 — Install Flue Hood (48HJ Rooftop Sections Only) — Refer to the 48HJ installation instructions for information on installing the flue hood.

Step 6 — Install Gas Piping (48HJ Rooftop Sections Only) — Refer to the 48HJ installation instructions for information on installing the gas piping.

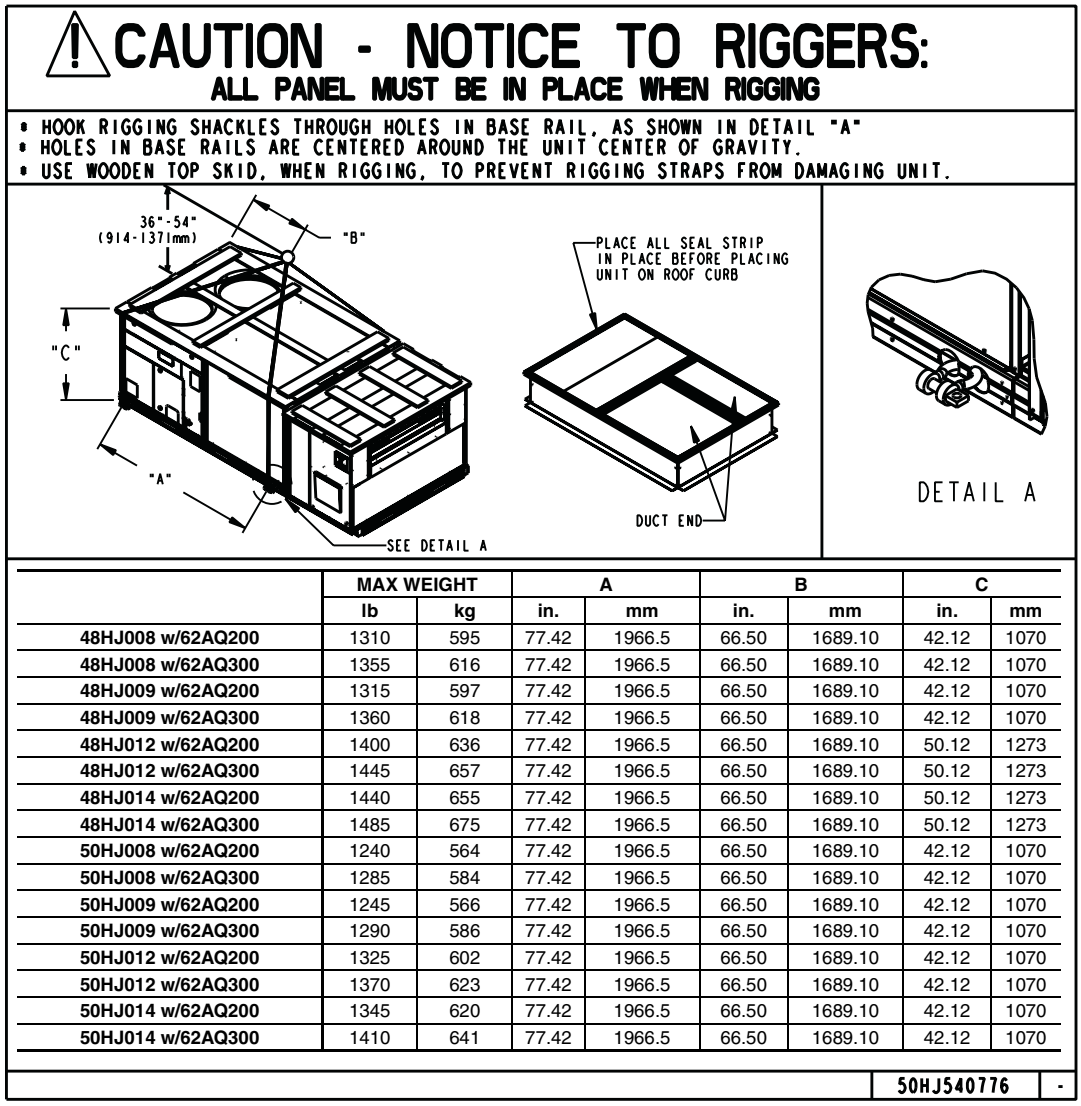
Step 7 — Install External Trap For Condensate Drain — The condensate from the rooftop unit along with condensate from the upper coil of the energy recovery section is internally piped to the condensate pan in the lower section of the energy recovery section. For this reason, the bottom drain on the rooftop unit CANNOT be used for a condensate drain. The $^3/_4$-in. drain connection on the energy recovery section is located near the bottom left of the exhaust air section. See Fig. 5A and 5B. The energy recovery section must have a field-fabricated, external, P-trap installed for condensate drainage. Trap must be at least 4-in. deep to protect against freeze-up. If the drain line is installed downstream from the external trap, pitch the line away from the unit at 1-in. per 10-ft of run. Do not use a pipe smaller than the connection ($^3/_4$-in.).

Step 8 — Make Electrical Connections

⚠ WARNING

Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC (National Electrical Code), ANSI/NFPA, latest edition, and local electrical codes. *Do not use gas piping as an electrical ground.* Failure to follow this warning could result in the installer being liable for personal injury of others.

FIELD POWER SUPPLY — All units except 208/230-v units are factory wired for the voltage shown on the nameplate.



	MAX WEIGHT		A		B		C	
	lb	kg	in.	mm	in.	mm	in.	mm
48HJ008 w/62AQ200	1310	595	77.42	1966.5	66.50	1689.10	42.12	1070
48HJ008 w/62AQ300	1355	616	77.42	1966.5	66.50	1689.10	42.12	1070
48HJ009 w/62AQ200	1315	597	77.42	1966.5	66.50	1689.10	42.12	1070
48HJ009 w/62AQ300	1360	618	77.42	1966.5	66.50	1689.10	42.12	1070
48HJ012 w/62AQ200	1400	636	77.42	1966.5	66.50	1689.10	50.12	1273
48HJ012 w/62AQ300	1445	657	77.42	1966.5	66.50	1689.10	50.12	1273
48HJ014 w/62AQ200	1440	655	77.42	1966.5	66.50	1689.10	50.12	1273
48HJ014 w/62AQ300	1485	675	77.42	1966.5	66.50	1689.10	50.12	1273
50HJ008 w/62AQ200	1240	564	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ008 w/62AQ300	1285	584	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ009 w/62AQ200	1245	566	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ009 w/62AQ300	1290	586	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ012 w/62AQ200	1325	602	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ012 w/62AQ300	1370	623	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ014 w/62AQ200	1345	620	77.42	1966.5	66.50	1689.10	42.12	1070
50HJ014 w/62AQ300	1410	641	77.42	1966.5	66.50	1689.10	42.12	1070

50HJ540776 -

Fig. 6B — Rigging Label — COBRA™ Energy Recovery Unit — Sizes 48/50HJ008-014

If the 208/230-v unit is to be connected to a 208-v power supply, the transformer must be rewired by moving the black wire with the 1/4-in. female space connector from the 230-volt connection and moving to the 200-volt 1/4-in. male terminal on the primary side of the transformer.

Refer to unit label diagram for additional information. Pigtails are provided for field wire connections. Use factory-supplied splices or UL (Underwriters' Laboratories) approved copper/aluminum connector.

When installing units, provide a disconnect per the NEC.

All field wiring must comply with NEC and local requirements.

Install field wiring as follows:

1. Install conduit through side panel openings. Install conduit between disconnect and control box.
2. Install power lines to terminal connections as shown in Fig. 7.

Voltage to compressor terminals during operation must be within voltage range indicated on unit nameplate (see Tables 1A-1H). On 3-phase units, voltages between phases must be balanced within 2% and the current within 10%. Use the formula shown in the legend for Tables 1A-1H, Note 2 to determine the percent of voltage imbalance. Operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components. Such operation would invalidate any applicable Carrier warranty.

FACTORY-SUPPLIED NON-FUSED DISCONNECT — The factory-supplied disconnect is capable of handling disconnect amps up to 80 A for a COBRA Energy Recovery unit. For disconnect amps greater than 80 A, a field-supplied disconnect is required.

FIELD CONTROL WIRING — *Install a Carrier-approved accessory thermidistat assembly according to installation instructions included with the accessory.* Locate thermidistat assembly on a solid wall in the conditioned space to sense average temperature in accordance with thermidistat installation instructions on page 30. Connect thermidistat wires to terminal board.

Route thermidistat cable or equivalent single leads of colored wire from subbase terminals through connector on unit to low-voltage connections (shown in Fig. 8). Thermidistat control wiring is routed to both the rooftop unit control box and the energy recovery section control box.

If a PremierLink™ control is used, a thermidistat does not need to be used. A humidistat and a separate room air sensor are used. Two extra terminal blocks (TB2 and TB3) are provided in the control box for all units with PremierLink controls. No wiring should be directly connected to the PremierLink control. Wire sensors to TB2 or TB3. Humidistat is wired to TB1 and energy recovery section control box.

NOTE: For wire runs up 50 ft, use no. 18 AWG (American Wire Gage) insulated wire (35 C minimum). For 50 to 75 ft, use no. 16 AWG insulated wire (35 C minimum). For over 75 ft, use no. 14 AWG insulated wire (35 C minimum). All wire larger than no. 18 AWG cannot be directly connected to the thermostat and will require a junction box and splice at the thermostat.

Pass the control wires through the hole provided in the corner post; then feed wires through the raceway built into the corner post to the 24-v barrier located on the left side of the control box. See Fig. 10. The raceway provides the UL required clearance between high- and low-voltage wiring.

NOTE: A humidistat and a temperature sensor can be used in place of a thermidistat for PremierLink™ units.

HEAT ANTICIPATOR SETTINGS — Set heat anticipator settings at .14 amp for the first stage and .14 amp for second-stage heating, when available.

Table 1A — Electrical Data (COBRA™ Energy Recovery 48HJ004-007 Units with 62AQ060)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	POWER SUPPLY		DISCONNECT SIZE*	
					MCA	FUSE OR HACR BKR	FLA	LRA
48HJ004	208/230-1-60	STD	NO	9.2	34.8/34.8	40/40	35/35	135/135
		STD	YES	9.2	40.8/40.8	45/45	41/41	140/140
	208/230-3-60	STD	NO	9.2	27.7/27.7	35/35	29/29	124/124
		STD	YES	9.2	33.7/33.7	40/35	34/34	129/129
		HIGH STATIC	NO	9.2	28.6/28.6	35/35	30/30	154/154
		HIGH STATIC	YES	9.2	34.6/34.6	40/40	35/35	158/158
	460-3-60	STD	NO	9.2	13.6	20	14	63
		STD	YES	9.2	16.3	20	20	67
		HIGH STATIC	NO	9.2	14.0	20	15	77
		HIGH STATIC	YES	9.2	16.7	20	20	82
48HJ005	208/230-1-60	STD	NO	9.2	44.4/44.4	60/60	44/44	173/173
		STD	YES	9.2	50.4/50.4	60/60	50/50	178/178
	208/230-3-60	STD	NO	9.2	31.7/31.7	40/40	33/33	140/140
		STD	YES	9.2	37.7/37.7	40/40	38/38	145/145
		HIGH STATIC	NO	9.2	32.6/32.6	40/40	34/34	170/170
		HIGH STATIC	YES	9.2	38.6/38.6	45/45	39/39	174/174
	460-3-60	STD	NO	9.2	15.2	20	16	70
		STD	YES	9.2	17.9	20	21	75
		HIGH STATIC	NO	9.2	15.6	20	16	84
		HIGH STATIC	YES	9.2	18.3	20	22	89
48HJ006	208/230-1-60	STD	NO	9.2	55.5/55.5	70/70	56/56	250/250
		STD	YES	9.2	61.5/61.5	70/70	61/61	255/255
	208/230-3-60	STD	NO	9.2	38.1/38.1	45/45	39/39	202/202
		STD	YES	9.2	44.1/44.1	50/50	44/44	207/207
		HIGH STATIC	NO	9.2	39.8/39.8	45/45	41/41	221/221
		HIGH STATIC	YES	9.2	45.8/45.8	50/50	46/46	226/226
	460-3-60	STD	NO	9.2	19.3	25	20	101
		STD	YES	9.2	22.0	25	25	106
		HIGH STATIC	NO	9.2	20.1	25	20	110
		HIGH STATIC	YES	9.2	22.8	25	26	115
48HJ007	208/230-3-60	STD	NO	9.2	42.0/42.0	50/50	42/42	234/234
		STD	YES	9.2	48.0/48.0	60/60	48/48	239/239
	208/230-3-60	HIGH STATIC	NO	9.2	43.7/43.7	50/50	44/44	253/253
		HIGH STATIC	YES	9.2	49.7/49.7	60/60	50/50	258/258
	460-3-60	STD	NO	9.2	19.8	25	20	114
		STD	YES	9.2	22.5	25	26	118
		HIGH STATIC	NO	9.2	20.6	25	21	123
		HIGH STATIC	YES	9.2	23.3	30	26	128

LEGEND

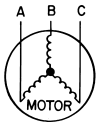
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1B — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ060)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ004	208/230-1-60	STD	NO	9.2	NONE	—/—	34.8/ 34.8	40/40	—	—	35/ 35	135/135
					001	15.9/18.3	35.7/ 38.8	40/45	—	—	35/ 37	135/135
					002	23.5/27.1	45.2/ 49.7	50/50	—	—	43/ 47	135/135
					003	31.4/36.3	55.1/ 61.2	—	60/ 70	004	52/ 58	135/135
					004	37.9/43.8	63.2/ 70.5	—	70/ 80	004	60/ 67	135/135
					002+002	46.9/54.2	74.5/ 83.6	—	80/ 90	005	70/ 79	135/135
		STD	YES	9.2	NONE	—/—	40.8/ 40.8	45/45	—	—	41/ 41	140/140
					001	15.9/18.3	40.8/ 43.0	45/50	—	—	41/ 42	140/140
					002	23.5/27.1	50.0/ 53.9	60/60	—	—	49/ 52	140/140
					003	31.4/36.3	59.9/ 65.4	—	60/ 70	004	58/ 63	140/140
					004	37.9/43.8	68.0/ 74.7	—	70/ 80	005	65/ 71	140/140
					002+002	46.9/54.2	79.3/ 87.8	—	80/ 90	005	76/ 83	140/140
	208/230-3-60	STD	NO	9.2	NONE	—/—	27.7/ 27.7	35/35	—	—	29/ 29	124/124
					001	9.2/10.6	27.7/ 29.1	35/35	—	—	29/ 29	124/124
					002	13.6/15.6	32.8/ 35.4	40/40	—	—	32/ 34	124/124
					003	18.1/20.9	38.5/ 42.0	45/45	—	—	37/ 40	124/124
					004	21.9/25.3	43.2/ 47.4	45/50	—	—	41/ 45	124/124
					005	33.4/38.5	57.5/ 64.0	—	60/ 70	002	55/ 60	124/124
		STD	YES	9.2	NONE	—/—	33.7/ 33.7	40/35	—	—	34/ 34	129/129
					001	9.2/10.6	33.7/ 33.7	40/40	—	—	34/ 34	129/129
					002	13.6/15.6	37.6/ 39.6	45/45	—	—	37/ 39	129/129
					003	18.1/20.9	43.3/ 46.2	50/50	—	—	43/ 45	129/129
					004	21.9/25.3	48.0/ 51.6	50/60	—	—	47/ 50	129/129
					005	33.4/38.5	62.3/ 68.2	—	70/ 70	002	60/ 65	129/129
		HIGH STATIC	NO	9.2	NONE	—/—	28.6/ 28.6	35/35	—	—	30/ 30	154/154
					001	9.2/10.6	28.6/ 30.0	35/35	—	—	30/ 30	154/154
					002	13.6/15.6	33.7/ 36.3	40/40	—	—	33/ 35	154/154
					003	18.1/20.9	39.4/ 42.9	45/45	—	—	38/ 41	154/154
					004	21.9/25.3	44.1/ 48.3	50/50	—	—	42/ 46	154/154
					005	33.4/38.5	58.4/ 64.9	—	60/ 70	002	56/ 62	154/154
		HIGH STATIC	YES	9.2	NONE	—/—	34.6/ 34.6	40/40	—	—	35/ 35	158/158
					001	9.2/10.6	34.6/ 34.6	40/40	—	—	35/ 35	158/158
					002	13.6/15.6	38.5/ 40.5	45/45	—	—	38/ 40	158/158
					003	18.1/20.9	44.2/ 47.1	50/50	—	—	44/ 46	158/158
					004	21.9/25.3	48.9/ 52.5	60/60	—	—	48/ 51	158/158
					005	33.4/38.5	63.2/ 69.1	—	70/ 70	003	61/ 66	158/158
	460-3-60	STD	NO	9.2	NONE	—	13.6	20	—	—	14	63
					006	7.2	16.7	20	—	—	14	63
					007	10.6	20.9	25	—	—	15	63
					008	13.8	25.0	25	—	—	24	63
					009	16.8	28.7	30	—	—	27	63
		STD	YES	9.2	NONE	—	16.3	20	—	—	20	67
					006	7.2	18.8	25	—	—	20	68
					007	10.6	23.0	25	—	—	20	68
					008	13.8	27.1	30	—	—	29	68
					009	16.8	30.8	35	—	—	32	68
		HIGH STATIC	NO	9.2	NONE	—	14.0	20	—	—	15	77
					006	7.2	17.1	20	—	—	15	77
					007	10.6	21.3	25	—	—	15	77
					008	13.8	25.4	30	—	—	24	77
					009	16.8	29.1	30	—	—	28	77
		HIGH STATIC	YES	9.2	NONE	—	16.7	20	—	—	20	82
					006	7.2	19.2	25	—	—	20	82
					007	10.6	23.4	25	—	—	20	82
					008	13.8	27.5	30	—	—	29	82
					009	16.8	31.2	35	—	—	32	82
50HJ005	208/230-1-60	STD	NO	9.2	NONE	—/—	44.4/ 44.4	60/60	—	—	44/ 44	173/173
					001	15.9/18.3	44.4/ 44.4	60/60	—	—	44/ 44	173/173
					003	31.4/36.3	55.1/ 61.2	—	60/ 70	004	52/ 58	173/173
					002+002	46.9/54.2	74.5/ 83.6	—	80/ 90	005	70/ 79	173/173
					003+003	62.8/72.5	94.4/106.5	—	100/110	005	88/100	173/173
					004+004	75.8/87.5	110.6/125.2	—	125/150	005	103/117	173/173
		STD	YES	9.2	NONE	—/—	50.4/ 50.4	60/60	—	—	50/ 50	178/178
					001	15.9/18.3	50.4/ 50.4	60/60	—	—	50/ 50	178/178
					003	31.4/36.3	59.9/ 65.4	—	60/ 70	004	58/ 63	178/178
					002+002	46.9/54.2	79.3/ 87.8	—	80/ 90	005	76/ 83	178/178
					003+003	62.8/72.5	99.2/110.7	—	100/125	005	94/104	178/178
					004+004	75.8/87.5	115.4/129.4	—	125/150	005	109/122	178/178
	208/230-3-60	STD	NO	9.2	NONE	—/—	31.7/ 31.7	40/40	—	—	33/ 33	140/140
					002	13.6/15.6	32.8/ 35.4	40/40	—	—	33/ 34	140/140
					003	18.1/20.9	38.5/ 42.0	45/45	—	—	37/ 40	140/140
					005	33.4/38.5	57.5/ 64.0	—	60/ 70	002	55/ 60	140/140
					004+004	43.8/50.5	70.6/ 79.0	—	80/ 80	003	67/ 74	140/140
		STD	YES	9.2	NONE	—/—	37.7/ 37.7	40/40	—	—	38/ 38	145/145
					002	13.6/15.6	37.7/ 39.6	45/45	—	—	38/ 39	145/145
					003	18.1/20.9	43.3/ 46.2	50/50	—	—	43/ 45	145/145
					005	33.4/38.5	62.3/ 68.2	—	70/ 70	002	60/ 65	145/145
					004+004	43.8/50.5	75.4/ 83.2	—	80/ 90	003	72/ 79	145/145
		HIGH STATIC	NO	9.2	NONE	—/—	32.6/ 32.6	40/40	—	—	34/ 34	170/170
					002	13.6/15.6	33.7/ 36.3	40/40	—	—	34/ 35	170/170
					003	18.1/20.9	39.4/ 42.9	45/45	—	—	38/ 41	170/170
					005	33.4/38.5	58.4/ 64.9	—	60/ 70	002	56/ 62	170/170
					004+004	43.8/50.5	71.5/ 79.9	—	80/ 80	003	68/ 75	170/170
		HIGH STATIC	YES	9.2	NONE	—/—	38.6/ 38.6	45/45	—	—	39/ 39	174/174
					002	13.6/15.6	38.6/ 40.5	45/45	—	—	39/ 40	174/174
					003	18.1/20.9	44.2/ 47.1	50/50	—	—	44/ 46	174/174
					005	33.4/38.5	63.2/ 69.1	—	70/ 70	003	61/ 66	174/174
					004+004	43.8/50.5	76.3/ 84.1	—	80/ 90	003	73/ 80	174/174
	460-3-60	STD	NO	9.2	NONE	—	15.2	20	—	—	16	70
					006	7.2	16.7	20	—	—	16	71
					008	13.8	25.0	25	—	—	18	71
					009	16.8	28.7	30	—	—	27	71
					008+008	27.7	42.3	45	—	025	40	71

Table 1B — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ060) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ005 (cont)	460-3-60	STD	YES	9.2	NONE	—	17.9	20	—	—	21	75
					006	7.2	18.8	25	—	—	21	75
					008	13.8	27.1	30	—	—	21	75
					009	16.8	30.8	35	—	025	32	75
					008+008	27.7	44.4	45	—	025	44	75
		HIGH STATIC	NO	9.2	NONE	—	15.6	20	—	—	16	84
					006	7.2	17.1	20	—	—	16	85
					008	13.8	25.4	30	—	—	19	85
					009	16.8	29.1	30	—	—	28	85
					008+008	27.7	42.7	45	—	025	40	85
		HIGH STATIC	YES	9.2	NONE	—	18.3	20	—	—	22	89
					006	7.2	19.2	25	—	—	22	90
					008	13.8	27.5	30	—	—	22	90
					009	16.8	31.2	35	—	025	32	90
					008+008	27.7	44.8	45	—	025	45	90
50HJ006	208/230-1-60	STD	NO	9.2	NONE	—/—	55.5/ 55.5	70/70	—	—	56/ 56	250/250
					002	23.5/27.1	55.5/ 55.5	—	70/ 70	004	56/ 56	250/250
					003	31.4/36.3	59.5/ 65.5	—	70/ 70	004	57/ 62	250/250
					002+002	46.9/54.2	78.9/ 87.9	—	80/ 90	005	75/ 83	250/250
					003+003	62.8/72.5	98.7/110.8	—	100/125	005	93/104	250/250
					004+004	75.8/87.5	115.0/129.6	—	125/150	005	108/121	250/250
		STD	YES	9.2	NONE	—/—	61.5/ 61.5	70/70	—	—	61/ 61	255/255
					002	23.5/27.1	61.5/ 61.5	—	70/ 70	004	61/ 61	255/255
					003	31.4/36.3	64.3/ 69.7	—	70/ 70	005	62/ 67	255/255
					002+002	46.9/54.2	83.7/ 92.1	—	90/100	005	80/ 88	255/255
					003+003	62.8/72.5	103.5/115.0	—	110/125	005	98/109	255/255
					004+004	75.8/87.5	119.8/133.8	—	125/150	005	113/126	255/255
	208/230-3-60	STD	NO	9.2	NONE	—/—	38.1/ 38.1	45/45	—	—	39/ 39	202/202
					002	13.6/15.6	38.1/ 38.1	45/45	—	—	39/ 39	202/202
					004	21.9/25.3	44.1/ 48.3	50/50	—	—	42/ 46	202/202
					005	33.4/38.5	58.4/ 64.9	—	60/ 70	002	56/ 62	202/202
					004+004	43.8/50.5	71.5/ 79.9	—	80/ 80	003	68/ 75	202/202
					004+005	55.2/63.8	85.8/ 96.4	—	90/100	003	81/ 91	202/202
		STD	YES	9.2	NONE	—/—	44.1/ 44.1	50/50	—	—	44/ 44	207/207
					002	13.6/15.6	44.1/ 44.1	50/50	—	—	44/ 44	207/207
					004	21.9/25.3	48.9/ 52.5	60/60	—	—	48/ 51	207/207
					005	33.4/38.5	63.2/ 69.1	—	70/ 70	003	61/ 66	207/207
					004+004	43.8/50.5	76.3/ 84.1	—	80/ 90	003	73/ 80	207/207
					004+005	55.2/63.8	90.6/100.6	—	100/110	003	86/ 95	207/207
		HIGH STATIC	NO	9.2	NONE	—/—	39.8/ 39.8	45/45	—	—	41/ 41	221/221
					002	13.6/15.6	39.8/ 39.8	45/45	—	—	41/ 41	221/221
					004	21.9/25.3	45.9/ 50.1	50/60	—	—	44/ 48	221/221
					005	33.4/38.5	60.3/ 66.7	—	70/ 70	003	58/ 63	221/221
					004+004	43.8/50.5	73.3/ 81.7	—	80/ 90	003	70/ 77	221/221
					004+005	55.2/63.8	87.6/ 98.3	—	90/100	003	83/ 93	221/221
		HIGH STATIC	YES	9.2	NONE	—/—	45.8/ 45.8	50/50	—	—	46/ 46	226/226
					002	13.6/15.6	45.8/ 45.8	50/50	—	—	46/ 46	226/226
					004	21.9/25.3	50.7/ 54.3	60/60	—	—	50/ 53	226/226
					005	33.4/38.5	65.1/ 70.9	—	70/ 80	003	63/ 68	226/226
					004+004	43.8/50.5	78.1/ 85.9	—	80/ 90	003	75/ 82	226/226
					004+005	55.2/63.8	92.4/102.5	—	100/110	003	88/ 97	226/226
	460-3-60	STD	NO	9.2	NONE	—	19.3	25	—	—	20	101
					006	7.2	19.3	25	—	—	20	101
					008	13.8	25.4	30	—	—	20	101
					009	16.8	29.1	30	—	—	28	101
					008+008	27.7	42.7	45	—	025	40	101
					008+009	30.7	46.4	50	—	025	44	101
		STD	YES	9.2	NONE	—	22.0	25	—	—	25	106
					006	7.2	22.0	25	—	—	25	106
					008	13.8	27.5	30	—	—	25	106
					009	16.8	31.2	35	—	025	32	106
					008+008	27.7	44.8	45	—	025	45	106
					008+009	30.7	48.5	50	—	025	48	106

LEGEND

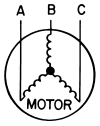
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1B — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ060) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ006 (cont)	460-3-60	HIGH STATIC	NO	9.2	NONE	—	20.1	25	—	—	20	110
					006	7.2	20.1	25	—	—	20	111
					008	13.8	26.2	30	—	—	20	111
					009	16.8	29.9	30	—	—	29	111
					008+008	27.7	43.5	45	—	025	41	111
					008+009	30.7	47.2	50	—	025	44	111
		HIGH STATIC	YES	9.2	NONE	—	22.8	25	—	—	26	115
					006	7.2	22.8	25	—	—	26	116
					008	13.8	28.3	30	—	—	26	116
					009	16.8	32.0	35	—	025	33	116
					008+008	27.7	45.6	50	—	025	46	116
					008+009	30.7	49.3	50	—	025	49	116
50HJ007	208/230-3-60	STD	NO	9.2	NONE	—/—	42.0/ 42.0	50/50	—	—	42/42	234/234
					002	13.6/15.6	42.0/ 42.0	50/50	—	—	42/42	234/234
					004	21.9/25.3	44.1/ 48.3	50/50	—	—	42/46	234/234
					005	33.4/38.5	58.4/ 64.9	—	60/ 70	002	56/62	234/234
					004+004	43.8/50.5	71.5/ 79.9	—	80/ 80	003	68/75	234/234
					004+005	55.2/63.8	85.8/ 96.4	—	90/100	003	81/91	234/234
		STD	YES	9.2	NONE	—/—	48.0/ 48.0	60/60	—	—	48/48	239/239
					002	13.6/15.6	48.0/ 48.0	60/60	—	—	48/48	239/239
					004	21.9/25.3	48.9/ 52.5	60/60	—	—	48/51	239/239
					005	33.4/38.5	63.2/ 69.1	—	70/ 70	003	61/66	239/239
					004+004	43.8/50.5	76.3/ 84.1	—	80/ 90	003	73/80	239/239
					004+005	55.2/63.8	90.6/100.6	—	100/110	003	86/95	239/239
		HIGH STATIC	NO	9.2	NONE	—/—	43.7/ 43.7	50/50	—	—	44/44	253/253
					002	13.6/15.6	43.7/ 43.7	50/50	—	—	44/44	253/253
					004	21.9/25.3	45.9/ 50.1	50/60	—	—	44/48	253/253
					005	33.4/38.5	60.3/ 66.7	—	70/ 70	003	58/63	253/253
					004+004	43.8/50.5	73.3/ 81.7	—	80/ 90	003	70/77	253/253
					004+005	55.2/63.8	87.6/ 98.3	—	90/100	003	83/93	253/253
		HIGH STATIC	YES	9.2	NONE	—/—	49.7/ 49.7	60/60	—	—	50/50	258/258
					002	13.6/15.6	49.7/ 49.7	60/60	—	—	50/50	258/258
					004	21.9/25.3	50.7/ 54.3	60/60	—	—	50/53	258/258
					005	33.4/38.5	65.1/ 70.9	—	70/ 80	003	63/68	258/258
					004+004	43.8/50.5	78.1/ 85.9	—	80/ 90	003	75/82	258/258
					004+005	55.2/63.8	92.4/102.5	—	100/110	003	88/97	258/258
	460-3-60	STD	NO	9.2	NONE	—	19.8	25	—	—	20	114
					006	7.2	19.8	25	—	—	20	114
					008	13.8	25.4	30	—	—	20	114
					009	16.8	29.1	30	—	—	28	114
					008+008	27.7	42.7	45	—	025	40	114
					008+009	30.7	46.4	50	—	025	44	114
		STD	YES	9.2	NONE	—	22.5	25	—	—	26	118
					006	7.2	22.5	25	—	—	26	119
					008	13.8	27.5	30	—	—	26	119
					009	16.8	31.2	35	—	025	32	119
					008+008	27.7	44.8	45	—	025	45	119
					008+009	30.7	48.5	50	—	025	48	119
		HIGH STATIC	NO	9.2	NONE	—	20.6	25	—	—	21	123
					006	7.2	20.6	25	—	—	21	124
					008	13.8	26.2	30	—	—	21	124
					009	16.8	29.9	30	—	—	29	124
					008+008	27.7	43.5	45	—	025	41	124
					008+009	30.7	47.2	50	—	025	44	124
		HIGH STATIC	YES	9.2	NONE	—	23.3	30	—	—	26	128
					006	7.2	23.3	30	—	—	26	128
					008	13.8	28.3	30	—	—	26	128
					009	16.8	32.0	35	—	025	33	128
					008+008	27.7	45.6	50	—	025	46	128
					008+009	30.7	49.3	50	—	025	49	128

LEGEND

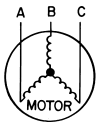
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1C — Electrical Data (COBRA™ Energy Recovery 48HJ004-007 Units with 62AQ100)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	POWER SUPPLY		DISCONNECT SIZE*	
					MCA	FUSE OR HACR BKR	FLA	LRA
48HJ004	208/230-1-60	STD	NO	15.1	40.7/40.7	45/45	42/42	161/161
		STD	YES	15.1	46.7/46.7	50/50	48/48	166/166
	208/230-3-60	STD	NO	15.1	33.6/33.6	40/40	36/36	150/150
		STD	YES	15.1	39.6/39.6	45/45	41/41	155/155
		HIGH STATIC	NO	15.1	34.5/34.5	40/40	37/37	180/180
		HIGH STATIC	YES	15.1	40.5/40.5	45/45	42/42	184/184
	460-3-60	STD	NO	15.1	16.5	20	18	76
		STD	YES	15.1	19.2	20	23	80
		HIGH STATIC	NO	15.1	16.9	20	18	90
		HIGH STATIC	YES	15.1	19.6	25	24	95
48HJ005	208/230-1-60	STD	NO	15.1	50.3/50.3	60/60	51/51	199/199
		STD	YES	15.1	56.3/56.3	70/70	57/57	204/204
	208/230-3-60	STD	NO	15.1	37.6/37.6	45/45	39/39	166/166
		STD	YES	15.1	43.6/43.6	50/50	45/45	171/171
		HIGH STATIC	NO	15.1	38.5/38.5	45/45	40/40	196/196
		HIGH STATIC	YES	15.1	44.5/44.5	50/50	46/46	200/200
	460-3-60	STD	NO	15.1	18.2	20	19	83
		STD	YES	15.1	20.9	25	25	88
		HIGH STATIC	NO	15.1	18.6	25	19	97
		HIGH STATIC	YES	15.1	21.3	25	25	102
48HJ006	208/230-1-60	STD	NO	15.1	61.4/61.4	70/70	62/62	276/276
		STD	YES	15.1	67.4/67.4	80/80	68/68	281/281
	208/230-3-60	STD	NO	15.1	44.0/44.0	50/50	46/46	228/228
		STD	YES	15.1	50.0/50.0	60/60	51/51	233/233
		HIGH STATIC	NO	15.1	45.7/45.7	60/60	48/48	247/247
		HIGH STATIC	YES	15.1	51.7/51.7	60/60	53/53	252/252
	460-3-60	STD	NO	15.1	22.2	25	23	114
		STD	YES	15.1	24.9	30	28	119
		HIGH STATIC	NO	15.1	23.0	30	24	123
		HIGH STATIC	YES	15.1	25.7	30	29	128
48HJ007	208/230-3-60	STD	NO	15.1	47.9/47.9	60/60	49/49	260/260
		STD	YES	15.1	53.9/53.9	60/60	55/55	265/265
		HIGH STATIC	NO	15.1	49.6/49.6	60/60	51/51	279/279
		HIGH STATIC	YES	15.1	55.6/55.6	60/60	57/57	284/284
	460-3-60	STD	NO	15.1	22.8	30	23	127
		STD	YES	15.1	25.5	30	29	131
		HIGH STATIC	NO	15.1	23.6	30	24	136
		HIGH STATIC	YES	15.1	26.3	30	30	141

LEGEND

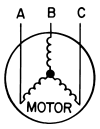
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1D — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ100)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ004	208/230-1-60	STD	NO	15.1	NONE	—/—	40.7/ 40.7	45/45	—	—	42/ 42	161/161
					001	15.9/18.3	42.5/ 45.5	50/60	—	—	42/ 44	161/161
					002	23.5/27.1	52.0/ 56.5	—	60/ 70	004	50/ 54	161/161
					003	31.4/36.3	61.9/ 67.9	—	70/ 70	004	59/ 65	161/161
					004	37.9/43.8	70.0/ 77.3	—	80/ 80	004	67/ 73	161/161
					002+002	46.9/54.2	81.3/ 90.3	—	90/100	005	77/ 85	161/161
		STD	YES	15.1	NONE	—/—	46.7/ 46.7	50/50	—	—	48/ 48	166/166
					001	15.9/18.3	47.3/ 49.7	60/60	—	—	48/ 49	166/166
					002	23.5/27.1	56.8/ 60.7	—	70/ 70	004	56/ 59	166/166
					003	31.4/36.3	66.7/ 72.1	—	70/ 80	004	65/ 70	166/166
					004	37.9/43.8	74.8/ 81.5	—	80/ 90	005	72/ 78	166/166
					002+002	46.9/54.2	86.1/ 94.5	—	90/100	005	82/ 90	166/166
	208/230-3-60	STD	NO	15.1	NONE	—/—	33.6/ 33.6	40/40	—	—	36/ 36	150/150
					001	9.2/10.6	34.1/ 35.9	45/45	—	—	36/ 36	150/150
					002	13.6/15.6	39.6/ 42.2	50/50	—	—	39/ 41	150/150
					003	18.1/20.9	45.3/ 48.8	60/60	—	—	44/ 47	150/150
					004	21.9/25.3	50.0/ 54.2	60/60	—	—	48/ 52	150/150
					005	33.4/38.5	64.3/ 70.7	—	70/ 80	002	61/ 67	150/150
		STD	YES	15.1	NONE	—/—	39.6/ 39.6	45/45	—	—	41/ 41	155/155
					001	9.2/10.6	39.6/ 40.1	50/50	—	—	41/ 41	155/155
					002	13.6/15.6	44.4/ 46.4	60/60	—	—	44/ 46	155/155
					003	18.1/20.9	50.1/ 53.0	60/60	—	—	49/ 52	155/155
					004	21.9/25.3	54.8/ 58.4	—	60/ 70	002	54/ 57	155/155
					005	33.4/38.5	69.1/ 74.9	—	80/ 80	002	67/ 72	155/155
		HIGH STATIC	NO	15.1	NONE	—/—	34.5/ 34.5	40/40	—	—	37/ 37	180/180
					001	9.2/10.6	35.0/ 36.8	45/45	—	—	37/ 37	180/180
					002	13.6/15.6	40.5/ 43.1	50/50	—	—	40/ 42	180/180
					003	18.1/20.9	46.2/ 49.7	60/60	—	—	45/ 48	180/180
					004	21.9/25.3	50.9/ 55.1	60/60	—	—	49/ 53	180/180
					005	33.4/38.5	65.2/ 71.6	—	70/ 80	002	62/ 68	180/180
		HIGH STATIC	YES	15.1	NONE	—/—	40.5/ 40.5	45/45	—	—	42/ 42	184/184
					001	9.2/10.6	40.5/ 41.0	50/50	—	—	42/ 42	184/184
					002	13.6/15.6	45.3/ 47.3	60/60	—	—	45/ 47	184/184
					003	18.1/20.9	51.0/ 53.9	60/60	—	—	50/ 53	184/184
					004	21.9/25.3	55.7/ 59.3	—	70/ 70	002	55/ 58	184/184
					005	33.4/38.5	70.0/ 75.8	—	80/ 80	003	68/ 73	184/184
	460-3-60	STD	NO	15.1	NONE	—	16.5	20.0	—	—	18	76
					006	7.2	20.1	25.0	—	—	18	76
					007	10.6	24.3	30.0	—	—	18	77
					008	13.8	28.4	35.0	—	025	27	80
					009	16.8	32.1	35.0	—	025	31	83
		STD	YES	15.1	NONE	—	19.2	20.0	—	—	23	80
					006	7.2	22.2	30.0	—	—	23	81
					007	10.6	26.4	30.0	—	—	23	81
					008	13.8	30.5	35.0	—	025	32	82
					009	16.8	34.2	40.0	—	025	35	85
		HIGH STATIC	NO	15.1	NONE	—	16.9	20.0	—	—	18	90
					006	7.2	20.5	25.0	—	—	18	90
					007	10.6	24.7	30.0	—	—	18	91
					008	13.8	28.8	35.0	—	025	28	94
					009	16.8	32.5	35.0	—	025	31	97
		HIGH STATIC	YES	15.1	NONE	—	19.6	25.0	—	—	24	95
					006	7.2	22.6	30.0	—	—	24	95
					007	10.6	26.8	30.0	—	—	24	95
					008	13.8	30.9	35.0	—	025	32	96
					009	16.8	34.6	40.0	—	025	36	99
50HJ005	208/230-1-60	STD	NO	15.1	NONE	—/—	50.3/ 50.3	60/60	—	—	51/ 51	199/199
					001	15.9/18.3	50.3/ 50.3	60/60	—	—	51/ 51	199/199
					003	31.4/36.3	61.9/ 67.9	—	70 70	004	59/ 65	199/199
					002+002	46.9/54.2	81.3/ 90.3	—	90/100	005	77/ 85	199/199
					003+003	62.8/72.5	101.2/113.3	—	110/125	005	95/106	199/199
					004+004	75.8/87.5	117.4/132.0	—	125/150	005	110/124	199/199
		STD	YES	15.1	NONE	—/—	56.3/ 56.3	70/70	—	—	57/ 57	204/204
					001	15.9/18.3	56.3/ 56.3	—	70/ 70	004	57/ 57	204/204
					003	31.4/36.3	66.7/ 72.1	—	70/ 80	004	65/ 70	204/204
					002+002	46.9/54.2	86.1/ 94.5	—	90/100	005	82/ 90	204/204
					003+003	62.8/72.5	106.0/117.5	—	110/125	005	101/111	204/204
					004+004	75.8/87.5	122.2/136.2	—	125/150	005	116/128	204/204
	208/230-3-60	STD	NO	15.1	NONE	—/—	37.6/ 37.6	45/45	—	—	39/ 39	166/166
					002	13.6/15.6	39.6/ 42.2	50/50	—	—	39/ 41	166/166
					003	18.1/20.9	45.3/ 48.8	60/60	—	—	44/ 47	166/166
					005	33.4/38.5	64.3/ 70.7	—	70/ 80	002	61/ 67	166/166
					004+004	43.8/50.5	77.3/ 85.8	—	80/ 90	003	73/ 81	166/166
		STD	YES	15.1	NONE	—/—	43.6/ 43.6	50/50	—	—	45/ 45	171/171
					002	13.6/15.6	44.4/ 46.4	60/60	—	—	45/ 46	171/171
					003	18.1/20.9	50.1/ 53.0	60/60	—	—	49/ 52	171/171
					005	33.4/38.5	69.1/ 74.9	—	80/ 80	002	67/ 72	171/171
					004+004	43.8/50.5	82.1/ 90.0	—	90/ 90	003	79/ 86	171/171
		HIGH STATIC	NO	15.1	NONE	—/—	38.5/ 38.5	45/45	—	—	40/ 40	196/196
					002	13.6/15.6	40.5/ 43.1	50/50	—	—	40/ 42	196/196
					003	18.1/20.9	46.2/ 49.7	60/60	—	—	45/ 48	196/196
					005	33.4/38.5	65.2/ 71.6	—	70/ 80	002	62/ 68	196/196
					004+004	43.8/50.5	78.2/ 86.7	—	80/ 90	003	74/ 82	196/196
		HIGH STATIC	YES	15.1	NONE	—/—	44.5/ 44.5	50/50	—	—	46/ 46	200/200
					002	13.6/15.6	45.3/ 47.3	60/60	—	—	46/ 47	200/200
					003	18.1/20.9	51.0/ 53.9	60/60	—	—	50/ 53	200/200
					005	33.4/38.5	70.0/ 75.8	—	80/ 80	003	68/ 73	200/200
					004+004	43.8/50.5	83.0/ 90.9	—	90/100	003	80/ 87	200/200
	460-3-60	STD	NO	15.1	NONE	—	18.2	20	—	—	19	83
					006	7.2	20.1	25	—	—	19	84
					008	13.8	28.4	35	—	025	19	84
					009	16.8	32.1	30	—	025	31	84
					008+008	27.7	45.6	50	—	025	43	94

Table 1D — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ100) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ005 (cont)	460-3-60	STD	YES	15.1	NONE	—	20.9	25	—	—	25	88
					006	7.2	22.2	30	—	—	25	88
					008	13.8	30.5	35	—	025	25	88
					009	16.8	34.2	40	—	025	35	88
					008+008	27.7	47.7	50	—	025	48	96
		HIGH STATIC	NO	15.1	NONE	—	18.6	25	—	—	19	97
					006	7.2	20.5	25	—	—	19	98
					008	13.8	28.8	35	—	025	19	98
					009	16.8	32.5	35	—	025	31	98
					008+008	27.7	46.0	50	—	025	43	108
		HIGH STATIC	YES	15.1	NONE	—	21.3	25	—	—	25	102
					006	7.2	22.6	30	—	—	25	103
					008	13.8	30.9	35	—	025	25	103
					009	16.8	34.6	40	—	025	36	103
					008+008	27.7	48.1	50	—	025	48	110
50HJ006	208/230-1-60	STD	NO	15.1	NONE	—/—	61.4/ 61.4	70/70	—	—	62/ 62	276/276
					002	23.5/27.1	61.4/ 61.4	—	70/ 70	004	62/ 62	276/276
					003	31.4/36.3	65.8/ 71.8	—	70/ 80	004	64/ 69	276/276
					002+002	46.9/54.2	85.2/ 94.2	—	90/100	005	81/ 90	276/276
					003+003	62.8/72.5	105.1/117.2	—	110/125	005	100/111	276/276
					004+004	75.8/87.5	121.3/135.9	—	125/150	005	115/128	276/276
		STD	YES	15.1	NONE	—/—	67.4/ 67.4	80/80	—	—	68/ 68	281/281
					002	23.5/27.1	67.4/ 67.4	—	80/ 80	004	68/ 68	281/281
					003	31.4/36.3	70.6/ 76.0	—	80/ 80	005	69/ 74	281/281
					002+002	46.9/54.2	90.0/ 98.4	—	90/100	005	87/ 95	281/281
					003+003	62.8/72.5	109.9/121.4	—	110/125	005	105/116	281/281
					004+004	75.8/87.5	126.1/140.1	—	150/150	005	120/133	281/281
	208/230-3-60	STD	NO	15.1	NONE	—/—	44.0/ 44.0	50/50	—	—	46/ 46	228/228
					002	13.6/15.6	44.0/ 44.0	50/50	—	—	46/ 46	228/228
					004	21.9/25.3	50.9/ 55.1	60/60	—	—	49/ 53	228/228
					005	33.4/38.5	65.2/ 71.6	—	70/ 80	002	62/ 68	228/228
					004+004	43.8/50.5	78.2/ 86.7	—	80/ 90	003	74/ 82	228/228
					004+005	55.2/63.8	92.6/103.2	—	100/110	003	88/ 97	228/228
		STD	YES	15.1	NONE	—/—	50.0/ 50.0	60/60	—	—	51/ 51	233/233
					002	13.6/15.6	50.0/ 50.0	60/60	—	—	51/ 51	233/233
					004	21.9/25.3	55.7/ 59.3	—	70/ 70	002	55/ 58	233/233
					005	33.4/38.5	70.0/ 75.8	—	80/ 80	003	68/ 73	233/233
					004+004	43.8/50.5	83.0/ 90.9	—	90/100	003	80/ 87	233/233
					004+005	55.2/63.8	97.4/107.4	—	100/110	003	93/102	233/233
		HIGH STATIC	NO	15.1	NONE	—/—	45.7/ 45.7	60/60	—	—	48/ 48	247/247
					002	13.6/15.6	45.7/ 45.7	60/60	—	—	48/ 48	247/247
					004	21.9/25.3	52.6/ 56.8	—	60/ 70	002	51/ 55	247/247
					005	33.4/38.5	66.9/ 73.3	—	70/ 80	002	64/ 70	247/247
					004+004	43.8/50.5	79.9/ 88.4	—	80/ 90	003	76/ 84	247/247
					004+005	55.2/63.8	94.3/104.9	—	100/110	003	90/ 99	247/247
		HIGH STATIC	YES	15.1	NONE	—/—	51.7/ 51.7	60/60	—	—	53/ 53	252/252
					002	13.6/15.6	51.7/ 51.7	60/60	—	—	53/ 53	252/252
					004	21.9/25.3	57.4/ 61.0	—	70/ 70	002	57/ 60	252/252
					005	33.4/38.5	71.7/ 77.5	—	80/ 80	003	70/ 75	252/252
					004+004	43.8/50.5	84.7/ 92.6	—	90/100	003	82/ 89	252/252
					004+005	55.2/63.8	99.1/109.1	—	100/110	003	95/104	252/252
	460-3-60	STD	NO	15.1	NONE	—	22.2	25	—	—	23	114
					006	7.2	22.2	25	—	—	23	114
					008	13.8	28.8	35	—	025	23	114
					009	16.8	32.5	35	—	025	31	114
					008+008	27.7	46.0	50	—	025	43	114
					008+009	30.7	49.8	50	—	025	47	114

LEGEND

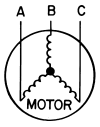
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1D — Electrical Data (COBRA™ Energy Recovery 50HJ004-007 Units with 62AQ100) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ006 (cont)	460-3-60	STD	YES	15.1	NONE	—	24.9	30	—	—	28	119
					006	7.2	24.9	30	—	—	28	119
					008	13.8	30.9	35	—	025	28	119
					009	16.8	34.6	40	—	025	36	119
					008+008	27.7	48.1	50	—	025	48	119
					008+009	30.7	51.9	60	—	025	52	119
		HIGH STATIC	NO	15.1	NONE	—	23.0	30	—	—	24	123
					006	7.2	23.0	30	—	—	24	124
					008	13.8	29.6	35	—	025	24	124
					009	16.8	33.3	35	—	025	32	124
					008+008	27.7	46.8	50	—	025	44	124
					008+009	30.7	50.6	60	—	025	48	124
		HIGH STATIC	YES	15.1	NONE	—	25.7	30	—	—	29	128
					006	7.2	25.7	30	—	—	29	129
					008	13.8	31.7	35	—	025	29	129
					009	16.8	35.4	40	—	025	37	129
					008+008	27.7	48.9	50	—	025	49	129
					008+009	30.7	52.7	60	—	025	53	129
50HJ007	208/230-3-60	STD	NO	15.1	NONE	—/—	47.9/ 47.9	60/60	—	—	49/ 49	260/260
					002	13.6/15.6	47.9/ 47.9	60/60	—	—	49/ 49	260/260
					004	21.9/25.3	50.9/ 55.1	60/60	—	—	49/ 53	260/260
					005	33.4/38.5	65.2/ 71.6	—	70/ 80	002	62/ 68	260/260
					004+004	43.8/50.5	78.2/ 86.7	—	80/ 90	003	74/ 82	260/260
					004+005	55.2/63.8	92.6/103.2	—	100/110	003	88/ 97	260/260
		STD	YES	15.1	NONE	—/—	53.9/ 53.9	60/60	—	—	55/ 55	265/265
					002	13.6/15.6	53.9/ 53.9	60/60	—	—	55/ 55	265/265
					004	21.9/25.3	55.7/ 59.3	—	70/ 70	002	55/ 58	265/265
					005	33.4/38.5	70.0/ 75.8	—	80/ 80	003	68/ 73	265/265
					004+004	43.8/50.5	83.0/ 90.9	—	90/100	003	80/ 87	265/265
					004+005	55.2/63.8	97.4/107.4	—	100/110	003	93/102	265/265
		HIGH STATIC	NO	15.1	NONE	—/—	49.6/ 49.6	60/60	—	—	51/ 51	279/279
					002	13.6/15.6	49.6/ 49.6	60/60	—	—	51/ 51	279/279
					004	21.9/25.3	52.6/ 56.8	—	60/ 70	002	51/ 55	279/279
					005	33.4/38.5	66.9/ 73.3	—	70/ 80	002	64/ 70	279/279
					004+004	43.8/50.5	79.9/ 88.4	—	80/ 90	003	76/ 84	279/279
					004+005	55.2/63.8	94.3/104.9	—	100/110	003	90/ 99	279/279
		HIGH STATIC	YES	15.1	NONE	—/—	55.6/ 55.6	60/60	—	—	57/ 57	284/284
					002	13.6/15.6	55.6/ 55.6	60/60	—	—	57/ 57	284/284
					004	21.9/25.3	57.4/ 61.0	—	70/ 70	002	57/ 60	284/284
					005	33.4/38.5	71.7/ 77.5	—	80/ 80	003	70/ 75	284/284
					004+004	43.8/50.5	84.7/ 92.6	—	90/100	003	82/ 89	284/284
					004+005	55.2/63.8	99.1/109.1	—	100/110	003	95/104	284/284
	460-3-60	STD	NO	15.1	NONE	—	22.8	30	—	—	23	127
					006	7.2	22.8	30	—	—	23	127
					008	13.8	28.8	35	—	025	23	127
					009	16.8	32.5	35	—	025	31	127
					008+008	27.7	46.0	50	—	025	43	127
					008+009	30.7	49.8	50	—	025	47	127
		STD	YES	15.1	NONE	—	25.5	30	—	—	29	131
					006	7.2	25.5	30	—	—	29	132
					008	13.8	30.9	35	—	025	29	132
					009	16.8	34.6	40	—	025	36	132
					008+008	27.7	48.1	50	—	025	48	132
					008+009	30.7	51.9	60	—	025	52	132
		HIGH STATIC	NO	15.1	NONE	—	23.6	30	—	—	24	136
					006	7.2	23.6	30	—	—	24	137
					008	13.8	29.6	35	—	025	24	137
					009	16.8	33.3	35	—	025	32	137
					008+008	27.7	46.8	50	—	025	44	137
					008+009	30.7	50.6	60	—	025	48	137
		HIGH STATIC	YES	15.1	NONE	—	26.3	30	—	—	30	141
					006	7.2	26.3	30	—	—	30	141
					008	13.8	31.7	35	—	025	30	141
					009	16.8	35.4	40	—	025	37	141
					008+008	27.7	48.9	50	—	025	49	141
					008+009	30.7	52.7	60	—	025	53	141

LEGEND

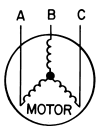
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1E — Electrical Data (COBRA™ Energy Recovery 48HJ008-014 Units with 62AQ200)

UNIT	NOMINAL V-PH-HZ	IFM TYPE	CONV OUTLET	62AQ FLA	POWER SUPPLY		DISCONNECT SIZE*	
					MCA	FUSE OR HACR BKR	FLA	LRA
48HJ008	208/230-3-60	STD	NO	21.9	60.1	70	66	366
		STD	YES	21.9	66.1	70	71	371
		HIGH STATIC	NO	21.9	63.2	70	69	391
		HIGH STATIC	YES	21.9	69.2	80	75	395
	460-3-60	STD	NO	10.2	29.4	35	32	184
		STD	YES	10.2	32.1	35	34	186
		HIGH STATIC	NO	10.2	30.8	35	34	197
		HIGH STATIC	YES	10.2	33.5	35	36	199
48HJ009	208/230-3-60	STD	NO	21.9	62.1	70	68	400
		STD	YES	21.9	68.1	70	73	405
		HIGH STATIC	NO	21.9	65.2	70	71	425
		HIGH STATIC	YES	21.9	65.2	70	71	425
	460-3-60	STD	NO	10.2	31.7	35	34	206
		STD	YES	10.2	34.4	40	37	208
		HIGH STATIC	NO	10.2	33.1	35	36	219
		HIGH STATIC	YES	10.2	35.8	40	38	221
48HJ012	208/230-3-60	STD	NO	21.9	74.9	80	81	465
		STD	YES	21.9	80.9	90	87	469
		HIGH STATIC	NO	21.9	79.3	90	86	488
		HIGH STATIC	YES	21.9	85.3	90	92	493
	460-3-60	STD	NO	10.2	35.1	40	38	234
		STD	YES	10.2	37.8	40	40	236
		HIGH STATIC	NO	10.2	37.7	40	41	245
		HIGH STATIC	YES	10.2	40.4	45	43	247
48HJ014	208/230-3-60	STD	NO	21.9	82.5	90	89	550
		STD	YES	21.9	88.5	100	95	555
	460-3-60	STD	NO	10.2	39.3	45	43	270
		STD	YES	10.2	42.0	45	45	272

LEGEND

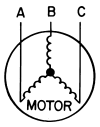
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1F — Electrical Data (COBRA™ Energy Recovery 50HJ008-014 Units with 62AQ200)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ008	208/230-3-60	STD	NO	21.9	NONE	—/—	60.1/ 60.1	70/70	—/—	—	66/ 66	366/366
					017	21.7/ 25.0	60.1/ 64.0	—	70/ 80	007	66/ 66	366/366
					010	33.4/ 38.5	74.5/ 80.9	—	80/ 90	007	72/ 78	366/366
					011	51.7/ 59.7	97.4/107.4	—	100/110	009	93/102	366/366
					012	66.7/ 77.0	116.2/129.0	—	125/150	009	111/122	366/366
					012+017	88.4/102.0	143.3/160.3	—	150/175	009	135/151	366/366
		STD	YES	21.9	NONE	—/—	66.1/ 66.1	70/70	—/—	—	71/ 71	371/371
					017	21.7/ 25.0	66.1/ 68.2	—	80/ 80	007	71/ 71	371/371
					010	33.4/ 38.5	79.3/ 85.1	—	90/ 90	009	78/ 83	371/371
					011	51.7/ 59.7	102.2/111.6	—	110/125	009	99/107	371/371
					012	66.7/ 77.0	121.0/133.2	—	125/150	009	116/127	371/371
					012+017	88.4/102.0	148.1/164.5	—	150/175	009	141/156	371/371
		HIGH STATIC	NO	21.9	NONE	—/—	63.2/ 63.2	70/70	—/—	—	69/ 69	391/391
					017	21.7/ 25.0	63.2/ 67.1	—	80/ 80	007	69/ 69	391/391
					010	33.4/ 38.5	77.6/ 84.0	—	90/ 90	009	76/ 82	391/391
					011	51.7/ 59.7	100.5/110.5	—	110/125	009	97/106	391/391
					012	66.7/ 77.0	119.3/132.1	—	125/150	009	114/126	391/391
					012+017	88.4/102.0	146.4/163.4	—	150/175	009	139/155	391/391
		HIGH STATIC	YES	21.9	NONE	—/—	69.2/ 69.2	80/80	—/—	—	75/ 75	395/395
					017	21.7/ 25.0	69.2/ 71.3	—	80/ 80	007	75/ 75	395/395
					010	33.4/ 38.5	82.4/ 88.2	—	90/100	009	81/ 86	395/395
					011	51.7/ 59.7	105.3/114.7	—	110/125	009	102/111	395/395
					012	66.7/ 77.0	124.1/136.3	—	125/150	009	120/131	395/395
					012+017	88.4/102.0	151.2/167.6	—	175/175	009	145/160	395/395
	460-3-60	STD	NO	10.2	NONE	—	29.4	35.0	—	—	32.0	184.0
					016	16.7	36.1	40.0	—	006	35.0	184.0
					013	19.8	40.0	45.0	—	006	38.0	184.0
					014	33.4	57.0	60.0	—	006	54.0	184.0
					015	39.7	64.8	—	70.0	008	61.0	184.0
					014+016	50.2	77.9	—	80.0	010	73.0	184.0
		STD	YES	10.2	NONE	—	32.1	35.0	—	—	34.0	186.0
					016	16.7	38.2	45.0	—	006	37.0	186.0
					013	19.8	42.1	45.0	—	006	41.0	186.0
					014	33.4	59.1	60.0	—	006	57.0	186.0
					015	39.7	66.9	—	70.0	008	64.0	186.0
					014+016	50.2	80.0	—	80.0	010	76.0	186.0
		HIGH STATIC	NO	10.2	NONE	—	30.8	35.0	—	—	34.0	196.0
					016	16.7	37.5	40.0	—	006	36.0	197.0
					013	19.8	41.4	45.0	—	006	40.0	197.0
					014	33.4	58.4	60.0	—	006	56.0	197.0
					015	39.7	66.2	—	70.0	008	63.0	197.0
					014+016	50.2	79.3	—	80.0	010	75.0	197.0
		HIGH STATIC	YES	10.2	NONE	—	33.5	35.0	—	—	36.0	198.0
					016	16.7	39.6	45.0	—	006	39.0	199.0
					013	19.8	43.5	45.0	—	006	42.0	199.0
					014	33.4	60.5	—	70.0	008	58.0	199.0
					015	39.7	68.3	—	70.0	008	65.0	199.0
					014+016	50.2	81.4	—	90.0	010	77.0	199.0
50HJ009	208/230-3-60	STD	NO	21.9	NONE	—/—	62.1/ 62.1	70/70	—	—	68/ 68	400/400
					017	21.7/ 25.0	62.1/ 64.0	—	70/ 80	012	68/ 68	400/400
					010	33.4/ 38.5	74.5/ 80.9	—	80/ 90	012	72/ 78	400/400
					011	51.7/ 59.7	97.4/107.4	—	100/110	015	93/102	400/400
					012	66.7/ 77.0	116.2/129.0	—	125/150	015	111/122	400/400
					012+017	88.4/102.0	143.3/160.3	—	150/175	015	135/151	400/400
		STD	YES	21.9	NONE	—/—	68.1/ 68.1	70/70	—	—	73/ 73	405/405
					017	21.7/ 25.0	68.1/ 68.2	—	80/ 80	012	73/ 73	405/405
					010	33.4/ 38.5	79.3/ 85.1	—	90/ 90	015	78/ 83	405/405
					011	51.7/ 59.7	102.2/111.6	—	110/125	015	99/107	405/405
					012	66.7/ 77.0	121.0/133.2	—	125/150	015	116/127	405/405
					012+017	88.4/102.0	148.1/164.5	—	150/175	015	141/156	405/405
		HIGH STATIC	NO	21.9	NONE	—/—	65.2/ 65.2	70/70	—/—	—	71/ 71	425/425
					017	21.7/ 25.0	65.2/ 67.1	—	80/ 80	012	71/ 71	425/425
					010	33.4/ 38.5	77.6/ 84.0	—	90/ 90	015	76/ 82	425/425
					011	51.7/ 59.7	100.5/110.5	—	110/125	015	97/106	425/425
					012	66.7/ 77.0	119.3/132.1	—	125/150	015	114/126	425/425
					012+017	88.4/102.0	146.4/163.4	—	150/175	015	139/155	425/425
		HIGH STATIC	YES	21.9	NONE	—/—	71.2/ 71.2	80/80	—/—	—	77/ 77	429/429
					017	21.7/ 25.0	71.2/ 71.3	—	80/ 80	012	77/ 77	429/429
					010	33.4/ 38.5	82.4 /88.2	—	90/100	015	81/ 86	429/429
					011	51.7/ 59.7	105.3/114.7	—	110/125	015	102/111	429/429
					012	66.7/ 77.0	124.1/136.3	—	125/150	015	120/131	429/429
					012+017	88.4/102.0	151.2/167.6	—	175/175	015	145/160	429/429
	460-3-60	STD	NO	10.2	NONE	—	31.7	35.0	—	—	34.0	206.0
					016	16.7	36.1	40.0	—	011	35.0	206.0
					013	19.8	40.0	45.0	—	011	38.0	206.0
					014	33.4	57.0	60.0	—	011	54.0	206.0
					015	39.7	64.8	—	70.0	014	61.0	206.0
					014+016	50.2	77.9	—	80.0	016	73.0	206.0
		STD	YES	10.2	NONE	—	34.4	40.0	—	—	37.0	208.0
					016	16.7	38.2	45.0	—	011	37.0	208.0
					013	19.8	42.1	45.0	—	011	41.0	208.0
					014	33.4	59.1	60.0	—	011	57.0	208.0
					015	39.7	66.9	—	70.0	014	64.0	208.0
					014+016	50.2	80.0	—	80.0	016	76.0	208.0
		HIGH STATIC	NO	10.2	NONE	—	33.1	35.0	—	—	36.0	218.0
					016	16.7	37.5	40.0	—	011	36.0	219.0
					013	19.8	41.4	45.0	—	011	40.0	219.0
					014	33.4	58.4	60.0	—	011	56.0	219.0
					015	39.7	66.2	—	70.0	014	63.0	219.0
					014+016	50.2	79.3	—	80.0	016	75.0	219.0
		HIGH STATIC	YES	10.2	NONE	—	35.8	40.0	—	—	38.0	220.0
					016	16.7	39.6	45.0	—	011	39.0	221.0
					013	19.8	43.5	45.0	—	011	42.0	221.0
					014	33.4	60.5	—	70.0	014	58.0	221.0
					015	39.7	68.3	—	70.0	014	65.0	221.0
					014+016	50.2	81.4	—	90.0	016	77.0	221.0

Table 1F — Electrical Data (COBRA™ Energy Recovery 50HJ008-014 Units with 62AQ200) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ012	208/230-3-60	STD	NO	21.9	NONE	—/—	74.9/ 74.9	—	80/ 80	†	81/ 81	465/465
					017	21.7/ 25.0	74.9/ 74.9	—	80/ 80	†	81/ 81	465/465
					010	33.4/ 38.5	77.6/ 84.0	—	90/ 90	†	81/ 82	465/465
					012	66.7/ 77.0	119.3/132.1	—	125/150	†	114/126	465/465
					012+017	88.4/102.0	146.4/163.4	—	150/175	†	139/155	465/465
					010+012	104.2/120.3	166.2/156.2	—	175/175	†	157/176	465/465
		STD	YES	21.9	NONE	—/—	80.9/ 80.9	—	90/ 90	†	87/ 87	469/469
					017	21.7/ 25.0	80.9/ 80.9	—	90/ 90	†	87/ 87	469/469
					010	33.4/ 38.5	82.4/ 88.2	—	90/100	†	87/ 87	469/469
					012	66.7/ 77.0	124.1/136.3	—	125/150	†	120/131	469/469
					012+017	88.4/102.0	151.2/167.6	—	175/175	†	145/160	469/469
					010+012	104.2/120.3	171.0/160.4	—	175/175	†	163/181	469/469
		HIGH STATIC	NO	21.9	NONE	—/—	79.3/ 79.3	—	90/ 90	†	86/ 86	488/488
					017	21.7/ 25.0	79.3/ 79.3	—	90/ 90	†	86/ 86	488/488
					010	33.4/ 38.5	82.3/ 88.8	—	90/100	†	86/ 87	488/488
					012	66.7/ 77.0	124.0/136.9	—	125/150	†	119/131	488/488
					012+017	88.4/102.0	151.1/168.2	—	175/175	†	144/160	488/488
					010+012	104.2/120.3	170.9/160.9	—	175/200	†	162/181	488/488
		HIGH STATIC	YES	21.9	NONE	—/—	85.3/ 85.3	—	90/ 90	†	92/ 92	493/493
					017	21.7/ 25.0	85.3/ 85.3	—	90/ 90	†	92/ 92	493/493
					010	33.4/ 38.5	87.1/ 93.0	—	100/100	†	92/ 92	493/493
					012	66.7/ 77.0	128.8/141.1	—	150/150	†	125/136	493/493
					012+017	88.4/102.0	155.9/172.4	—	175/175	†	150/165	493/493
					010+012	104.2/120.3	175.7/165.1	—	200/200	†	168/186	493/493
	460-3-60	STD	NO	10.2	NONE	—	35.1	40.0	—	—	38.0	233.0
					016	16.7	37.5	40.0	—	011	38.0	234.0
					013	19.8	41.4	45.0	—	011	40.0	234.0
					015	39.7	66.2	—	70.0	014	63.0	234.0
					014+016	50.2	79.3	—	80.0	016	75.0	234.0
					013+015	60.1	76.7	—	90.0	016	86.0	234.0
		STD	YES	10.2	NONE	—	37.8	40.0	—	—	40.0	235.0
					016	16.7	39.6	45.0	—	011	40.0	236.0
					013	19.8	43.5	45.0	—	011	42.0	236.0
					015	39.7	68.3	—	70.0	014	65.0	236.0
					014+016	50.2	81.4	—	90.0	016	77.0	236.0
					013+015	60.1	78.8	—	90.0	016	89.0	236.0
		HIGH STATIC	NO	10.2	NONE	—	37.7	40.0	—	—	41.0	245.0
					016	16.7	40.3	45.0	—	011	41.0	245.0
					013	19.8	44.3	50.0	—	011	43.0	245.0
					015	39.7	69.1	—	70.0	014	66.0	245.0
					014+016	50.2	82.1	—	90.0	016	78.0	245.0
					013+015	60.1	79.6	—	90.0	016	89.0	245.0
		HIGH STATIC	YES	10.2	NONE	—	40.4	45.0	—	—	43.0	247.0
					016	16.7	42.4	50.0	—	011	43.0	247.0
					013	19.8	46.4	50.0	—	011	45.0	247.0
					015	39.7	71.2	—	80.0	014	68.0	247.0
					014+016	50.2	84.2	—	90.0	016	80.0	247.0
					013+015	60.1	81.7	—	90.0	016	92.0	247.0
50HJ014	208/230-3-60	STD	NO	21.9	NONE	—/—	82.5/ 82.5	—	90/ 90	†	89/ 89	550/550
					017	21.7/ 25.0	82.5/ 82.5	—	90/ 90	†	89/ 89	550/550
					010	33.4/ 38.5	82.3/ 88.8	—	90/100	†	89/ 89	550/550
					012	66.7/ 77.0	124.0/136.9	—	125/150	†	119/131	550/550
					012+017	88.4/102.0	151.1/168.2	—	175/175	†	144/160	550/550
					010+012	104.2/120.3	170.9/160.9	—	175/200	†	162/181	550/550
		STD	YES	21.9	NONE	—/—	88.5/ 88.5	—	100/100	†	95/ 95	555/555
					017	21.7/ 25.0	88.5/ 88.5	—	100/100	†	95/ 95	555/555
					010	33.4/ 38.5	87.1/ 93.0	—	100/100	†	95/ 95	555/555
					012	66.7/ 77.0	128.8/141.1	—	150/150	†	125/136	555/555
					012+017	88.4/102.0	155.9/172.4	—	175/175	†	150/165	555/555
					010+012	104.2/120.3	175.7/165.1	—	200/200	†	168/186	555/555
	460-3-60	STD	NO	10.2	NONE	—	39.3	45.0	—	—	43.0	260.0
					016	16.7	40.3	45.0	—	011	43.0	260.0
					013	19.8	44.3	50.0	—	011	43.0	260.0
					015	39.7	69.1	—	70.0	016	66.0	260.0
					014+016	50.2	82.1	—	90.0	016	78.0	260.0
					013+015	60.1	79.6	—	90.0	016	89.0	260.0
		STD	YES	10.2	NONE	—	42.0	45.0	—	—	45.0	262.0
					016	16.7	42.4	50.0	—	011	45.0	262.0
					013	19.8	46.4	50.0	—	011	45.0	262.0
					015	39.7	71.2	—	80.0	016	68.0	262.0
					014+016	50.2	84.2	—	90.0	016	80.0	262.0
					013+015	60.1	81.7	—	90.0	016	92.0	262.0

LEGEND

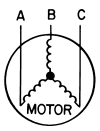
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1G — Electrical Data (COBRA™ Energy Recovery 48HJ008-014 Units with 62AQ300)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	POWER SUPPLY		DISCONNECT SIZE*	
					MCA	FUSE OR HACR BKR	FLA	LRA
48HJ008	208/230-3-60	STD	NO	29.8	68.0	80	75	420
		STD	YES	29.8	74.0	80	80	425
		HIGH STATIC	NO	29.8	71.1	80	78	445
		HIGH STATIC	YES	29.8	77.1	80	84	449
	460-3-60	STD	NO	15.8	35.0	40	38	211
		STD	YES	15.8	37.7	40	41	213
		HIGH STATIC	NO	15.8	36.4	40	40	224
		HIGH STATIC	YES	15.8	39.1	45	43	226
48HJ009	208/230-3-60	STD	NO	29.8	70.0	80	77	454
		STD	YES	29.8	76.0	80	82	459
		HIGH STATIC	NO	29.8	73.1	80	80	479
		HIGH STATIC	YES	29.8	79.1	80	86	483
	460-3-60	STD	NO	15.8	37.3	40	41	233
		STD	YES	15.8	40.0	45	43	235
		HIGH STATIC	NO	15.8	38.7	45	42	246
		HIGH STATIC	YES	15.8	41.4	45	45	248
48HJ012	208/230-3-60	STD	NO	29.8	82.8	90	90	519
		STD	YES	29.8	88.8	100	96	523
		HIGH STATIC	NO	29.8	87.2	100	95	542
		HIGH STATIC	YES	29.8	93.2	100	101	547
	460-3-60	STD	NO	15.8	40.7	45	44	261
		STD	YES	15.8	43.4	45	47	263
		HIGH STATIC	NO	15.8	43.3	50	47	272
		HIGH STATIC	YES	15.8	46.0	50	50	274
48HJ014	208/230-3-60	STD	NO	29.8	90.4	100	98	604
		STD	YES	29.8	96.4	100	104	609
	460-3-60	STD	NO	15.8	44.9	50	49	297
		STD	YES	15.8	47.6	50	51	299

LEGEND

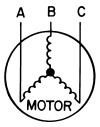
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457}$$

$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Table 1H — Electrical Data (COBRA™ Energy Recovery 50HJ008-014 Units with 62AQ300)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ008	208/230-3-60	STD	NO	29.8	NONE	—/—	68.0/ 68.0	80/80	—	—	75/ 75	420/420
					017	21.7/ 25.0	68.7/ 72.9	—	90/ 90	007	75/ 75	420/420
					010	33.4/ 38.5	83.3/ 89.7	—	100/100	007	81/ 87	420/420
					011	51.7/ 59.7	106.2/116.2	—	125/125	009	102/112	420/420
					012	66.7/ 77.0	125.0/137.8	—	150/150	009	120/131	420/420
					012+017	88.4/102.0	152.1/169.1	—	175/175	009	145/160	420/420
		STD	YES	29.8	NONE	—/—	74.0/ 74.0	80/80	—	—	80/ 80	425/425
					017	21.7/ 25.0	74.0/ 77.1	—	90/ 90	007	80/ 80	425/425
					010	33.4/ 38.5	88.1/ 93.9	—	100/110	009	87/ 92	425/425
					011	51.7/ 59.7	111.0/120.4	—	125/125	009	108/116	425/425
					012	66.7/ 77.0	129.8/142.0	—	150/150	009	125/136	425/425
					012+017	88.4/102.0	156.9/173.3	—	175/175	009	150/165	425/425
		HIGH STATIC	NO	29.8	NONE	—/—	71.1/ 71.1	80/80	—	—	78/ 78	445/445
					017	21.7/ 25.0	71.8/ 76.0	—	90/ 90	007	78/ 78	445/445
					010	33.4/ 38.5	86.4/ 92.8	—	100/110	009	85/ 91	445/445
					011	51.7/ 59.7	109.3/119.3	—	125/125	009	106/115	445/445
					012	66.7/ 77.0	128.1/140.9	—	150/150	009	123/135	445/445
					012+017	88.4/102.0	155.2/172.2	—	175/175	009	148/164	445/445
		HIGH STATIC	YES	29.8	NONE	—/—	77.1/ 77.1	80/80	—	—	84/ 84	449/449
					017	21.7/ 25.0	77.1/ 80.2	—	90/100	007	84/ 84	449/449
					010	33.4/ 38.5	91.2/ 97.0	—	110/110	009	90/ 96	449/449
					011	51.7/ 59.7	114.1/123.5	—	125/150	009	111/120	449/449
					012	66.7/ 77.0	132.9/145.1	—	150/150	009	129/140	449/449
					012+017	88.4/102.0	160.0/176.4	—	175/200	009	154/169	449/449
	460-3-60	STD	NO	15.8	NONE	—	35.0	40.0	—	—	38.0	211.0
					016	16.7	44.4	60.0	—	006	41.0	211.0
					013	19.8	48.3	60.0	—	006	45.0	211.0
					014	33.4	65.3	—	80.0	008	61.0	211.0
					015	39.7	73.1	—	90.0	008	68.0	211.0
					014+016	50.2	86.2	—	100.0	010	80.0	211.0
		STD	YES	15.8	NONE	—	37.7	40.0	—	—	41.0	213.0
					016	16.7	46.5	60.0	—	006	44.0	213.0
					013	19.8	50.4	60.0	—	006	47.0	213.0
					014	33.4	67.4	—	80.0	008	63.0	213.0
					015	39.7	75.2	—	90.0	008	70.0	213.0
					014+016	50.2	88.3	—	100.0	010	82.0	213.0
		HIGH STATIC	NO	15.8	NONE	—	36.4	40.0	—	—	40.0	223.0
					016	16.7	45.8	60.0	—	006	43.0	224.0
					013	19.8	49.7	60.0	—	006	47.0	224.0
					014	33.4	66.7	—	80.0	008	62.0	224.0
					015	39.7	74.5	—	90.0	008	69.0	224.0
					014+016	50.2	87.6	—	100.0	010	81.0	224.0
		HIGH STATIC	YES	15.8	NONE	—	39.1	45.0	—	—	43.0	225.0
					016	16.7	47.9	60.0	—	006	45.0	226.0
					013	19.8	51.8	60.0	—	006	49.0	226.0
					014	33.4	68.8	—	80.0	008	65.0	226.0
					015	39.7	76.6	—	90.0	008	72.0	226.0
					014+016	50.2	89.7	—	100.0	010	84.0	226.0
50HJ009	208/230-3-60	STD	NO	29.8	NONE	—/—	70.0/ 70.0	80/80	—	†	77/ 77	454/454
					017	21.7/ 25.0	70.0/ 72.9	—	90/ 90	012	77/ 77	454/454
					010	33.4/ 38.5	83.3/ 89.7	—	100/100	012	81/ 87	454/454
					011	51.7/ 59.7	106.2/116.2	—	125/125	015	102/112	454/454
					012	66.7/ 77.0	125.0/137.8	—	150/150	015	120/131	454/454
					012+017	88.4/102.0	152.1/169.1	—	175/175	015	145/160	454/454
		STD	YES	29.8	NONE	—/—	76.0/ 76.0	80/80	—	†	82/ 82	459/459
					017	21.7/ 25.0	76.0/ 77.1	—	90/ 90	012	82/ 82	459/459
					010	33.4/ 38.5	88.1/ 93.9	—	100/110	015	87/ 92	459/459
					011	51.7/ 59.7	111.0/120.4	—	125/125	015	108/116	459/459
					012	66.7/ 77.0	129.8/142.0	—	150/150	015	125/136	459/459
					012+017	88.4/102.0	156.9/173.3	—	175/175	015	150/165	459/459
		HIGH STATIC	NO	29.8	NONE	—/—	73.1/ 73.1	80/80	—	†	80/ 80	479/479
					017	21.7/ 25.0	73.1/ 76.0	—	90/ 90	012	80/ 80	479/479
					010	33.4/ 38.5	86.4/ 92.8	—	100/110	015	85/ 91	479/479
					011	51.7/ 59.7	109.3/119.3	—	125/125	015	106/115	479/479
					012	66.7/ 77.0	128.1/140.9	—	150/150	015	123/135	479/479
					012+017	88.4/102.0	155.2/172.2	—	175/175	015	148/164	479/479
		HIGH STATIC	YES	29.8	NONE	—/—	79.1/ 79.1	80/80	—	†	86/ 86	483/483
					017	21.7/ 25.0	79.1/ 80.2	—	90/100	012	86/ 86	483/483
					010	33.4/ 38.5	91.2/ 97.0	—	110/110	015	90/ 96	483/483
					011	51.7/ 59.7	114.1/123.5	—	125/150	015	111/120	483/483
					012	66.7/ 77.0	132.9/145.1	—	150/150	015	129/140	483/483
					012+017	88.4/102.0	160.0/176.4	—	175/200	015	154/169	483/483
	460-3-60	STD	NO	15.8	NONE	—	37.3	40.0	—	—	41.0	233.0
					016	16.7	44.4	60.0	—	011	41.0	233.0
					013	19.8	48.3	60.0	—	011	45.0	233.0
					014	33.4	65.3	—	80.0	014	61.0	233.0
					015	39.7	73.1	—	90.0	014	68.0	233.0
					014+016	50.2	86.2	—	100.0	016	80.0	233.0
		STD	YES	15.8	NONE	—	40.0	45.0	—	—	43.0	235.0
					016	16.7	46.5	60.0	—	011	44.0	235.0
					013	19.8	50.4	60.0	—	011	47.0	235.0
					014	33.4	67.4	—	80.0	014	63.0	235.0
					015	39.7	75.2	—	90.0	014	70.0	235.0
					014+016	50.2	88.3	—	100.0	016	82.0	235.0
		HIGH STATIC	NO	15.8	NONE	—	38.7	45.0	—	—	42.0	245.0
					016	16.7	45.8	60.0	—	011	43.0	246.0
					013	19.8	49.7	60.0	—	011	47.0	246.0
					014	33.4	66.7	—	80.0	014	62.0	246.0
					015	39.7	74.5	—	90.0	014	69.0	246.0
					014+016	50.2	87.6	—	100.0	016	81.0	246.0
		HIGH STATIC	YES	15.8	NONE	—	41.4	45.0	—	—	45.0	247.0
					016	16.7	47.9	60.0	—	011	45.0	248.0
					013	19.8	51.8	60.0	—	011	49.0	248.0
					014	33.4	68.8	—	80.0	014	65.0	248.0
					015	39.7	76.6	—	90.0	014	72.0	248.0
					014+016	50.2	89.7	—	100.0	016	84.0	248.0

Table 1H — Electrical Data (COBRA™ Energy Recovery 50HJ008-014 Units with 62AQ300) (cont)

UNIT	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	62AQ FLA	HEATER CRHEATER ---A00	HEAT	POWER SUPPLY			SINGLE POINT BOX CRSINGLE ---A00	DISCONNECT SIZE*	
						FLA	MCA	FUSE OR HACR BKR	MOCP		FLA	LRA
50HJ012	208/230-3-60	STD	NO	29.8	NONE	—/—	82.8/ 82.8	—	90/ 90	†	90/ 90	519/519
					017	21.7/ 25.0	82.8/ 82.8	—	90/ 90	†	90/ 90	519/519
					010	33.4/ 38.5	86.4/ 92.8	—	100/110	†	90/ 91	519/519
					012	66.7/ 77.0	128.1/140.9	—	150/150	†	123/135	519/519
					012+017	88.4/102.0	155.2/172.2	—	175/175	†	148/164	519/519
					010+012	104.2/120.3	175.0/165.0	—	175/200	†	166/185	519/519
		STD	YES	29.8	NONE	—/—	88.8/ 88.8	—	100/100	†	96/ 96	523/523
					017	21.7/ 25.0	88.8/ 88.8	—	100/100	†	96/ 96	523/523
					010	33.4/ 38.5	91.2/ 97.0	—	110/110	†	96/ 96	523/523
					012	66.7/ 77.0	132.9/145.1	—	150/150	†	129/140	523/523
					012+017	88.4/102.0	160.0/176.4	—	175/200	†	154/169	523/523
					010+012	104.2/120.3	179.8/169.2	—	200/200	†	172/190	523/523
		HIGH STATIC	NO	29.8	NONE	—/—	87.2/ 87.2	—	100/100	†	95/ 95	542/542
					017	21.7/ 25.0	87.2/ 87.2	—	100/100	†	95/ 95	542/542
					010	33.4/3 8.5	90.8/ 97.2	—	100/110	†	95/ 96	542/542
					012	66.7/ 77.0	132.5/145.3	—	150/150	†	128/140	542/542
					012+017	88.4/102.0	159.6/176.6	—	175/200	†	153/169	542/542
					010+012	104.2/120.3	179.4/169.4	—	200/200	†	171/190	542/542
		HIGH STATIC	YES	29.8	NONE	—/—	93.2/ 93.2	—	100/100	†	101/101	547/547
					017	21.7/ 25.0	93.2/ 93.2	—	100/100	†	101/101	547/547
					010	33.4/ 38.5	95.6/101.4	—	110/110	†	101/101	547/547
					012	66.7/ 77.0	137.3/149.5	—	150/150	†	134/145	547/547
					012+017	88.4/102.0	164.4/180.8	—	175/200	†	159/174	547/547
					010+012	104.2/120.3	184.2/173.6	—	200/200	†	177/195	547/547
	460-3-60	STD	NO	15.8	NONE	—	40.7	45.0	—	—	44.0	260.0
					016	16.7	45.8	60.0	—	011	44.0	261.0
					013	19.8	49.7	60.0	—	011	47.0	261.0
					014	33.4	66.7	—	80.0	014	62.0	261.0
					014+016	50.2	87.6	—	100.0	016	81.0	261.0
					013+015	60.1	85.0	—	110.0	016	93.0	261.0
		STD	YES	15.8	NONE	—	43.4	45.0	—	—	47.0	262.0
					016	16.7	47.9	60.0	—	014	47.0	263.0
					013	19.8	51.8	60.0	—	011	49.0	263.0
					014	33.4	68.8	—	80.0	014	65.0	263.0
					014+016	50.2	89.7	—	100.0	016	84.0	263.0
					013+015	60.1	87.1	—	110.0	016	95.0	263.0
		HIGH STATIC	NO	15.8	NONE	—	43.3	50.0	—	—	47.0	272.0
					016	16.7	48.4	60.0	—	014	47.0	272.0
					013	19.8	52.3	60.0	—	011	50.0	272.0
					014	33.4	69.3	—	80.0	014	65.0	272.0
					014+016	50.2	90.2	—	100.0	016	84.0	272.0
					013+015	60.1	87.6	—	110.0	016	96.0	272.0
		HIGH STATIC	YES	15.8	NONE	—	46.0	50.0	—	0.0	50.0	274.0
					016	16.7	50.5	60.0	—	014	50.0	274.0
					013	19.8	54.4	60.0	—	011	52.0	274.0
					014	33.4	71.4	—	90.0	014	68.0	274.0
					014+016	50.2	92.3	—	100.0	016	87.0	274.0
					013+015	60.1	89.7	—	110.0	016	98.0	274.0
50HJ014	208/230-3-60	STD	NO	29.8	NONE	—/—	90.4/ 90.4	—	100/100	†	98/ 98	604/604
					017	21.7/ 25.0	90.4/ 90.4	—	100/100	†	98/ 98	604/604
					010	33.4/ 38.5	90.8/ 97.2	—	100/110	†	98/ 98	604/604
					012	66.7/ 77.0	132.5/145.3	—	150/150	†	128/140	604/604
					012+017	88.4/102.0	159.6/176.6	—	175/200	†	153/169	604/604
					010+012	104.2/120.3	179.4/169.4	—	200/200	†	171/190	604/604
		STD	YES	29.8	NONE	—/—	96.4/ 96.4	—	100/100	†	104/104	609/609
					017	21.7/ 25.0	96.4/ 96.4	—	100/100	†	104/104	609/609
					010	33.4/ 38.5	95.6/101.4	—	110/110	†	104/104	609/609
					012	66.7/ 77.0	137.3/149.5	—	150/150	†	134/145	609/609
					012+017	88.4/102.0	164.4/180.8	—	175/200	†	159/174	609/609
					010+012	104.2/120.3	184.2/173.6	—	200/200	†	177/195	609/609
		STD	NO	15.8	NONE	—	44.9	50.0	—	—	49.0	287.0
					016	16.7	48.4	60.0	—	014	49.0	287.0
					013	19.8	52.3	60.0	—	011	50.0	287.0
					016	16.7	48.4	—	70.0	014	49.0	287.0
					014+016	50.2	90.2	—	100.0	016	84.0	287.0
					013+015	60.1	87.6	—	110.0	016	96.0	287.0
		STD	YES	15.8	NONE	—	47.6	50.0	—	—	51.0	289.0
					016	16.7	50.5	60.0	—	014	51.0	289.0
					013	19.8	54.4	60.0	—	011	52.0	289.0
					016	16.7	50.5	—	70.0	014	51.0	289.0
					014+016	50.2	92.3	—	100.0	016	87.0	289.0
					013+015	60.1	89.7	—	110.0	016	98.0	289.0

LEGEND

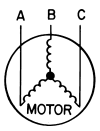
FLA — Full Load Amps
HACR — Heating, Air Conditioning and Refrigeration
IFM — Indoor (Evaporator) Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
NEC — National Electrical Code
UL — Underwriters' Laboratories

*Used to determine minimum disconnect per NEC.
†Single point box CRSINGLE017A00 is part of base unit.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. UL, Canada units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

$$= \frac{1371}{3}$$

$$= 457$$

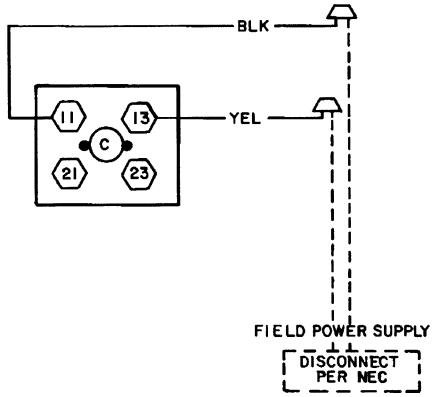
Determine maximum deviation from average voltage.
(AB) 457 – 452 = 5 v
(BC) 464 – 457 = 7 v
(AC) 457 – 455 = 2 v
Maximum deviation is 7 v.
Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

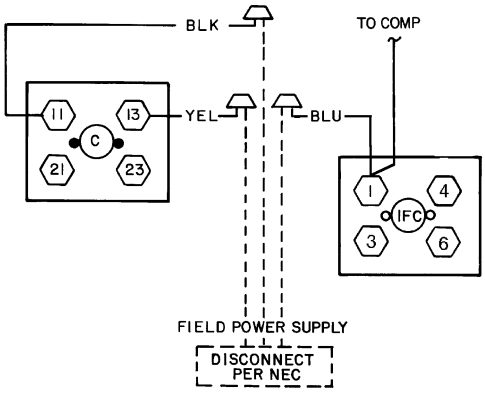
$$= 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

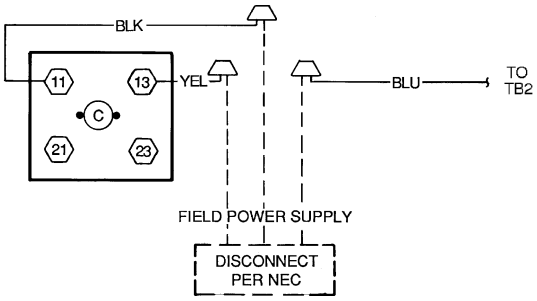
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.



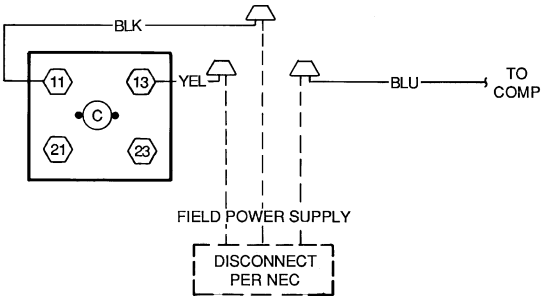
208/230-1-60



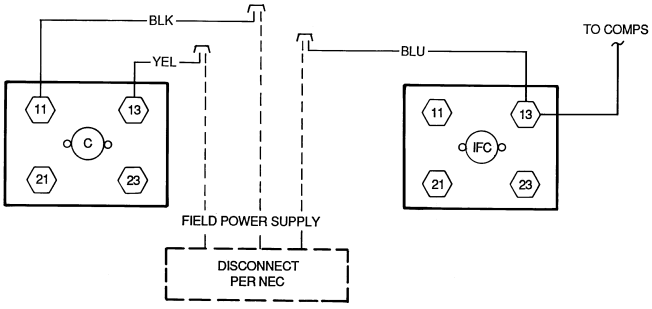
208/230-3-60
460-3-60
(SIZE 007 ONLY)



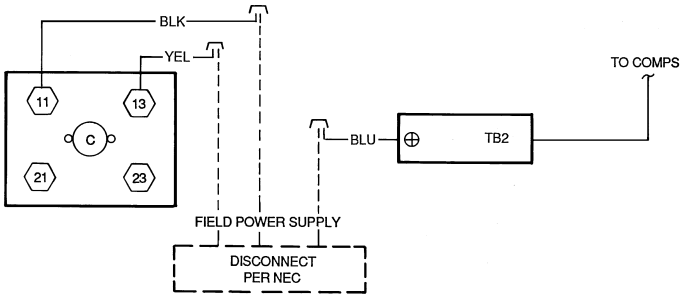
575-3-60
(SIZE 007 ONLY)



208/230-3-60
575-3-60, 460-3-60
(SIZES 004-006)



208/230-3-60 AND 460-3-60
(SIZES 008-014)



575-3-60
(SIZES 008-014)

LEGEND

C — Contactor
COMP — Compressor
IFC — Indoor-Fan Contactor
NEC — National Electrical Code
TB — Terminal Block

Fig. 7 — Power Wiring Connections

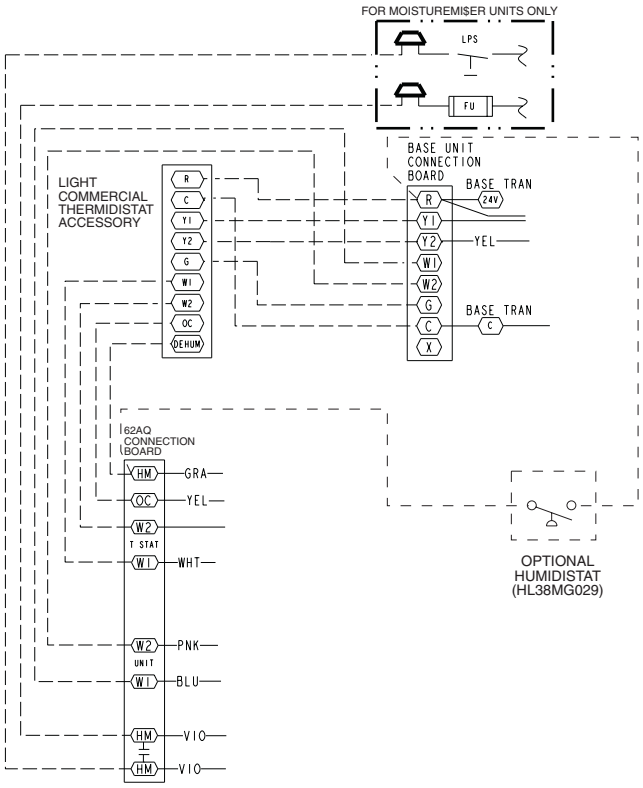


Fig. 8 — Light Commercial Thermidistat Accessory Low-Voltage Connections

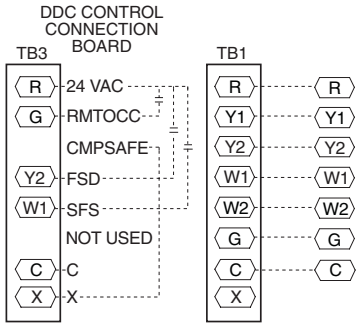


Fig. 9 — Low Voltage Connections (Units with PremierLink™ Controls)

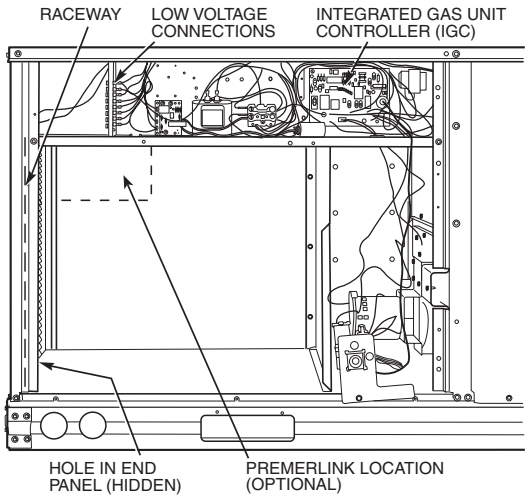


Fig. 10 — Field Control Wiring Raceway (48HJ Shown)

Step 9 — Assemble and Mount Supply-Air Hood — The hood kit supplied with the energy recovery section is needed to complete this installation. See Fig. 11. The energy recovery section supply air hood installs around its motorized damper inlet.

NOTE: Mount the hood sides to the energy recovery section first, and then the hood top for easier installation. The thermostats are shipped factory-wired and taped behind the damper blade of the energy recovery section. Knobs and screws are in hood package.

1. Assemble and mount supply air hood as shown in Fig. 11.
2. Discard the tape that holds the thermostats behind the damper plates. Mount thermostats to the hood sides of the energy recovery section unit into the holes provided, with thermostat terminals facing up. See Fig. 11. Mount outside cooling set point thermostat part number HH22HA060 (white label) on the left side of the hood. See Fig. 11.
3. Mount the outside heating thermostat part number HH22HA065 (red label) on the right side of the hood. See Fig. 11.
4. From the outside of the unit's side panels fasten the thermostat(s) with two mounting screws, with the quick connect terminals face up. See Fig. 11.
5. Install thermostat knobs (provided in kit). See Fig. 11.
6. Set supply air quantity (on units with optional factory-installed supply air fan [GA] or field-installed accessory supply air fan kit [CRFANKIT001-006A00]). Select the fan speed and damper position to obtain desired cfm. Relocate damper stops to the desired position on the damper support rail and adjust the fan speed by relocating the wire on the supply fan motor terminal block. Factory set position is 45 degrees for the damper position, and medium speed for the motor. Relocate stops to top hole for 30 degrees, bottom hole for 60 degrees, and remove stops for 90 degrees (see Fig. 11).
7. Install the aluminum filter screen and end cap with screws along the top, as shown in Fig. 11.

Step 10 — Mount the Barometric Relief Damper — The hood kit supplied with the energy recovery section is needed to complete this installation. The exhaust air hood (that includes the barometric relief damper) must be assembled and installed on the energy recovery section per the instructions below. See Fig. 12.

1. Install the barometric relief damper onto the energy recovery section by mounting the hinge with 2 screws then sliding in the hinge pin. See Fig. 12.
2. Install damper limiter for 30, 45, or 60 degree angles. Limiter pin not required for 90-degree setting (set to the desired position based on CFM requirements and fan speed). See Fig. 12. Fan speed is adjusted by relocating wires on fan terminal blocks.
3. Loosen compressor bolts and remove shipping blocks from under compressor on the 62AQ060 and 62AQ100 sizes only.
4. Install exhaust hood.
5. Install wire guard as shown in Fig. 12.

⚠ WARNING

Never operate the unit without the wire guard in place.

Step 11 — Set the Outdoor Cooling and Heating Thermostats

IMPORTANT: The energy recovery section unit is shipped with an outdoor thermostat set at 55 F which locks out mechanical cooling on the RTU (rooftop unit) and the energy recovery section compressor. If this feature is not desirable, the rooftop unit's compressor can be allowed to run by relocating both gray wires to the same side of the Low Temperature Lockout Thermostat (LTLO) leaving the white wire on the opposite pole, locking out only the energy recovery section compressor. The LTLO is also accessible by removing the filter access panel and the door of the damper mounting bracket. Refer to Troubleshooting section.

COOLING — During the unoccupied period, the economizer mode of operation is used as the first stage of cooling. When the outside air temperature is below the cooling thermostat set point, the outside air will be used for first stage cooling.

HEATING — The heating thermostat should be adjusted to the second stage balance point (heat output of the energy recovery section plus the heat output of the first stage on rooftop unit equals building load at this temperature). Above this setting, first stage heating will be the energy recovery section unit and second stage will be the first stage of the rooftop unit. Below this point first stage heating will be the energy recovery section unit plus first stage heating of the rooftop unit. The second stage will be the second stage of the rooftop unit.

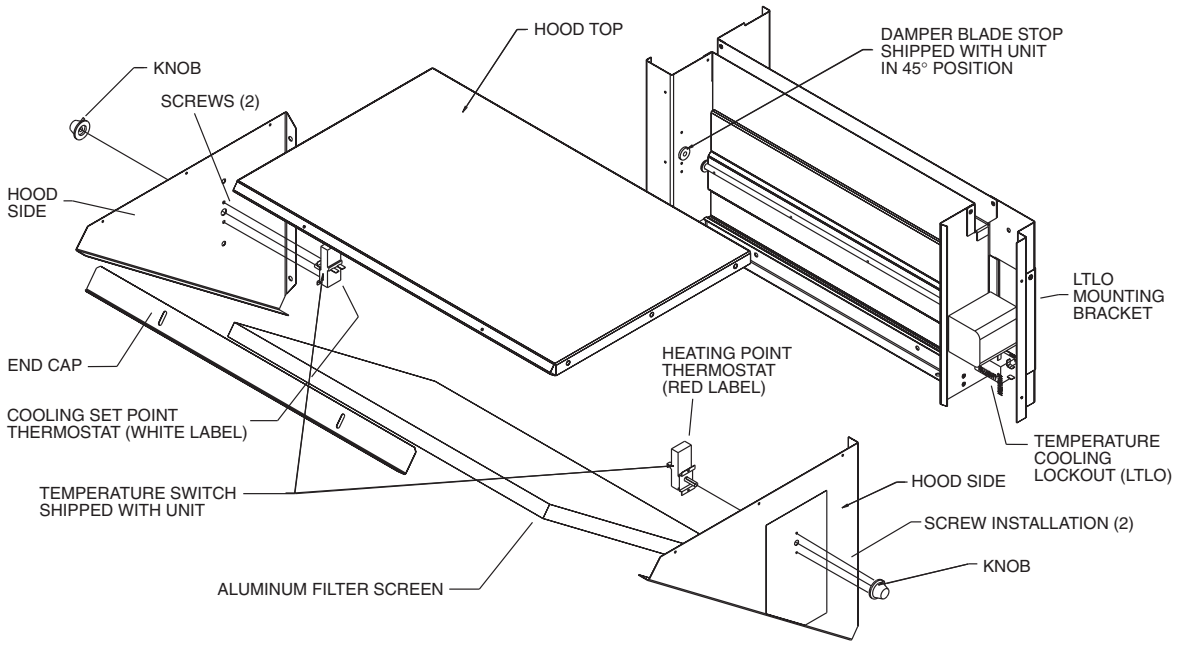


Fig. 11 — Energy Recovery Section Supply-Air Hood Assembly

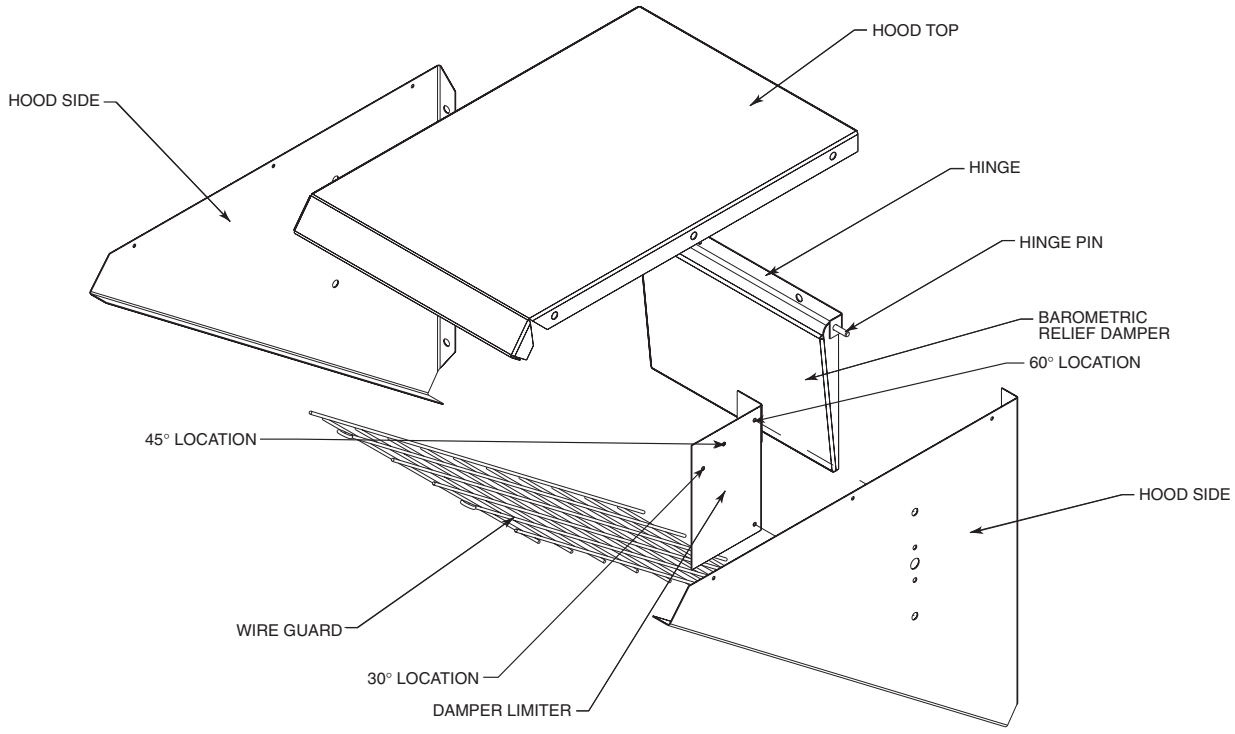


Fig. 12 — Energy Recovery Section Barometric Exhaust Air Hood Assembly

LIGHT COMMERCIAL THERMIDISTAT ACCESSORY

General — A Light Commercial Thermidistat Accessory (part number TSTATCCPLH01-B) or PremierLink™ controller with humidistat is required for each unit for field installation to control the energy recovery section. See Fig. 13.

The Light Commercial Thermidistat is a 7-day programmable, wall-mounted, low-voltage control which combines temperature and humidity control in a single unit. It provides separate set points for heating and cooling, and adds dehumidification with separate set points for occupied and unoccupied periods. Different heating and cooling set points and times are programmable for up to 4 periods per day and 7 days per week. The dehumidification output provides direct control of humidity. During power loss an internal memory stores programs and settings for unlimited time, and the clock continues to run for at least 8 hours. Batteries are not used.

Power — Note that this control does not require batteries and is not "power stealing." It does require 24 vac (R and C terminals) from the RTU's low-voltage transformer to be connected to it for proper operation. The control will not operate without these 2 connections. See Fig. 14.

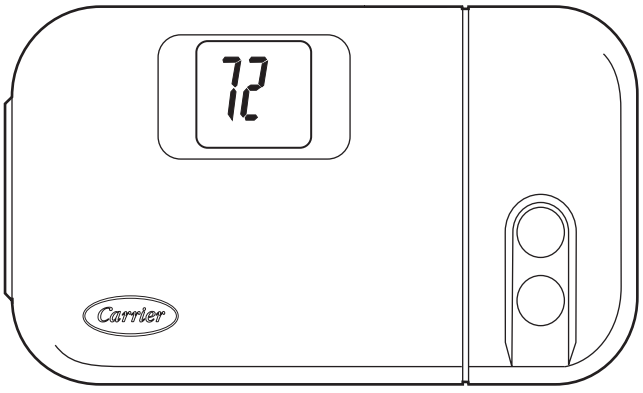
Dehumidification Equipment and Connections — The dehumidification output terminals on the Light Commercial Thermidistat must be connected to the dehumidify input terminals on the energy recovery section. Additionally, if the RTU is equipped with optional MoistureMi$er™ Dehumidification accessory, a relay in the energy recovery section energizes the MoistureMi$er solenoid to activate the enhanced dehumidification mode.

Step 1 — Select Light Commercial Thermidistat Location — Light Commercial Thermidistat should be mounted:

- Approximately 5 ft (1.5 m) from floor.
- Close to or in a frequently used room, preferably on an inside partitioning wall.
- On a section of wall without pipes or ductwork.

The Light Commercial Thermidistat should NOT be mounted:

- Close to a window, on an outside wall, or next to a door leading to the outside.
- Exposed to direct light and heat from a lamp, sun, fireplace, or other temperature-radiating object that may cause a false reading.
- Close to or in direct airflow from supply registers and return-air registers.
- In areas with poor air circulation, such as behind a door or in an alcove.



HEIGHT (in.)	WIDTH (in.)	DEPTH (in.)
4 1/4	7 1/2	1 3/8

Fig. 13 — Light Commercial Thermidistat Accessory

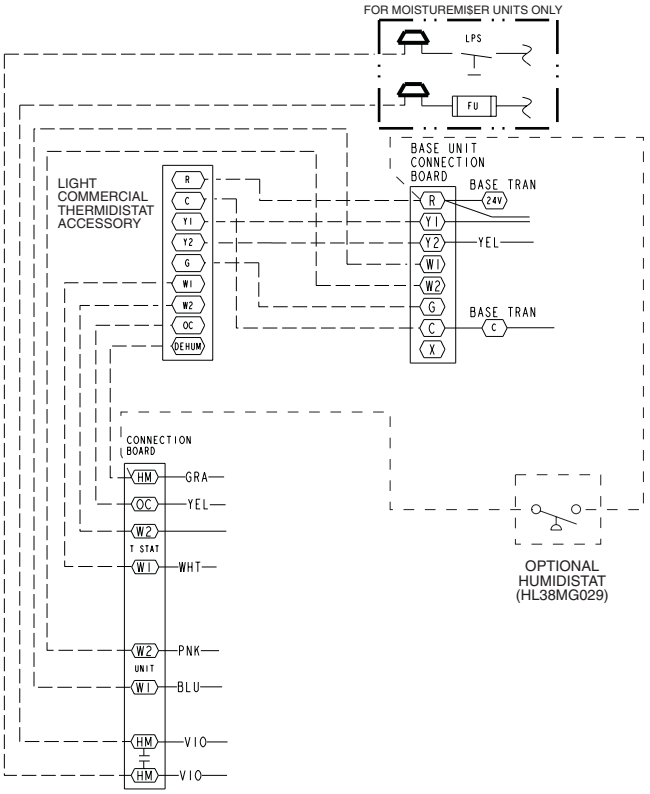


Fig. 14 — Light Commercial Thermidistat Accessory Low-Voltage Connections

Step 2 — Set DIP Switches — There is a 4-section DIP switch within the Light Commercial Thermidistat which must be properly set by the installer. It is easiest to set these 4 switches before the Light Commercial Thermidistat is mounted to the wall, so complete the following steps first:

1. Open hinged Light Commercial Thermidistat cover.
2. Remove cover completely by gently snapping it apart at the hinge.
3. Switches are located in upper right corner of circuit board. To change switch position, use corner of a small screwdriver to slide switch to opposite position.
4. After switches have been set, do not reassemble the 2 halves. The rear plastic will be first mounted to wall.

SWITCH 1 — Not used

SWITCH 2 — Not used

SWITCH 3 — SMART/CONVENTIONAL RECOVERY — Selects between conventional or smart recovery from setback. Conventional recovery changes to new set point at preprogrammed time. Smart recovery, which is active in both heating and cooling, starts selected cycle 90 minutes earlier and smoothly adjusts set point so room will arrive at programmed temperature at programmed time.

NOTE: The occupied output is only energized at the preprogrammed time.

To Set:

OFF — for smart recovery. This is factory default.
ON — for conventional recovery.

SWITCH 4 — INSTALLER TEST OFF/ON — Selects a special installer test mode that assists with checkout and troubleshooting. See Step 5 — Conduct Light Commercial Thermidistat Start-Up and Checkout.

To Set:

OFF — for normal operation. (Factory default setting.)
ON — for Installer Test mode.

Step 3 — Install Light Commercial Thermidistat

⚠ WARNING

Before installing Light Commercial Thermidistat, turn off all power to Weathermaster® COBRA units. There may be more than one power disconnect. Electrical shock can cause personal injury or death. Install lockout tags on disconnects.

1. Turn off all power to equipment. Tag disconnect.
2. If an existing thermostat is being replaced:
   a. Remove existing thermostat from wall.
   b. Disconnect wires from existing thermostat, one at a time.
   c. As each wire is disconnected, record wire color and terminal marking.
   d. New or additional wire may be needed to accommodate added humidity outputs transformer common.
   e. Discard or recycle old thermostat.

⚠ WARNING

Mercury is a hazardous waste and MUST be disposed of properly.

3. Route wires through large hole in rear plastic. Level rear plastic (separated from front plastic in Step 2 — Set DIP Switches, on page 30). Level rear plastic against wall (for aesthetic value only — Light Commercial Thermidistat need not be leveled for proper operation) and mark wall through 2 mounting holes.
4. Drill two $^{3}/_{16}$-in. mounting holes in wall where marked.
5. Secure rear plastic to wall with 2 screws and anchors provided. Additional mounting holes are available for more secure mounting if needed. Make sure all wires extend through hole in mounting base.
6. Adjust length and routing of each wire to reach proper connector block and terminal on mounting base with $^{1}/_{4}$-in. extra length. Strip only $^{1}/_{4}$ in. of insulation from each wire to prevent adjacent wires from shorting together when connected.
7. Match and connect equipment wires to proper terminals of each connector block. Remember R and C must be connected for proper operation (see Fig. 14).

⚠ CAUTION

Improper wiring or installation may damage Light Commercial Thermidistat. Check to make sure wiring is correct before proceeding with installation or turning on power. Refer to wiring schematic in the Troubleshooting section of this manual.

8. Push any excess wire into wall and against rear plastic. Seal hole in wall to prevent air leaks. Leaks can affect operation.
9. Reattach Light Commercial Thermidistat body to mounting base by first reattaching hinge.
10. Close Light Commercial Thermidistat assembly, making sure pins on back of circuit board align with sockets in connector.
11. Turn on power to equipment.

On power up, all display segments will light for 2 seconds. For the next 8 seconds, a 2-digit code appears on LED display that identifies Light Commercial Thermidistat configuration:

CP — Commercial Product

Step 4 — Set Light Commercial Thermidistat Configuration (Fig. 15 and 16) — Configuration options, like DIP switch settings, are intended to be selected at installation and normally are not modified by the owner. These options must be made as part of the installation. A special procedure allows entry into the Configuration mode. While in configuration mode, up to 10 selections can be made. A description of each selection and how to use the Configuration mode are as follows:

CONFIGURATION OPTIONS — SUMMARY

Option 1 — Anticipator adjustment
Option 2 — Clean filter timer adjustment
Option 3 — English/Metric selection
Option 4 — Fan (G) ON with W selection
Option 9 — Holiday heat set point
Option 10 — Holiday cool set point
Option 11 — Holiday humidity set point
Option 13 — Room temperature offset adjustment
Option 14 — Heat cool deadband adjustment
Option 21 — Keyboard lock

TO ENTER CONFIGURATION MODE — Press and hold FAN button for approximately 10 seconds until COOL set point display indicates a flashing "01". The Light Commercial Thermidistat is now in Configuration mode. It will automatically exit this mode if no button is pressed for 3 minutes. Pressing HOLD End button will exit the Configuration mode immediately.

WHILE IN CONFIGURATION MODE — The upper small (COOL set point) display indicates selected option number and large display indicates selection made within that option. One of these will be flashing. The up and down set point buttons are used both to move between available options and to make selection for each option. When option number (small display) is flashing, the up and down set point buttons allows for scrolling through options moving between available option numbers. After desired option number has been selected, press SET TIME/TEMP button once. The large display will now flash, indicating that up and down set point buttons now control available choices within that option. Each press of SET TIME/TEMP button switches between available option (small display) and available selections within each option (large display).

Option 1 — Anticipator Adjustment — This adjustment controls sensitivity and cycle rate of Light Commercial Thermidistat. Higher numbers decrease sensitivity and slow cycle rate. Lower numbers increase sensitivity and cycle rate. Anticipator values can range from 1 to 9. Factory default is 3. This default selection provides optimum performance in nearly all installations. Try it first; do not change setting unless there is evidence of need to do so.

Unlike conventional anticipators, this setting is not determined by current draw. There is no need to measure, know, or compensate for current draw. There is also no droop with this Light Commercial Thermidistat. Regardless of setting and number of stages, both heating and cooling will control to their respective set points.

TO ADJUST:

1. Enter Configuration mode. The upper small (COOL set point) display will be flashing 01. If not, use up and down set point buttons to move it to 01.
2. Press SET TIME/TEMP button once to flash current selection of 1, 2, 3, 4, 5, 6, 7, 8, or 9 on large display. Factory default is 3.
3. Use up and down set point buttons to move to desired anticipator setting.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

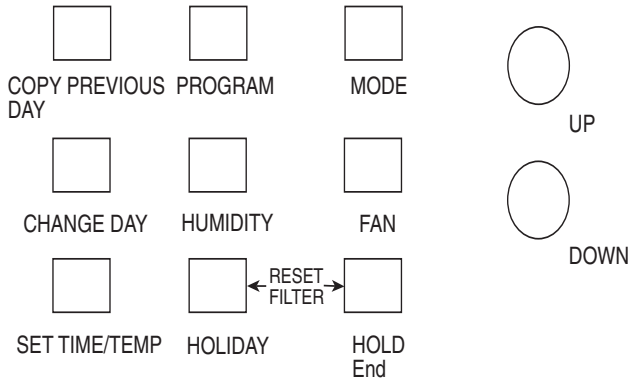


Fig. 15 — Light Commercial Thermidistat Keypad

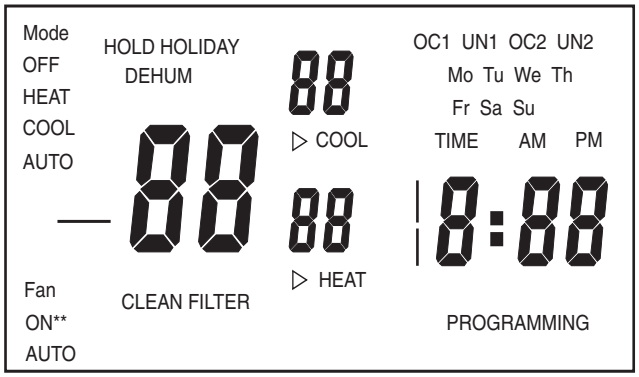


Fig. 16 — Light Commercial Thermidistat LCD on Power Up

Option 2 — Clean Filter Timer — Select hours of blower operation (heating, cooling, or fan) before CLEAN FILTER icon is displayed. With OFF selected, icon will never come on, disabling this feature. Time selection can range from 400 to 3600 blower operation hours by selecting numbers 1 through 9. (Time is 400 times number selected.) Factory default is 2 (800 hr). Recommended blower operation hours selections are: disposable filter — 400 to 800 hr; media filter — 1200 to 1600 hr; electronic air cleaner — 1600 to 2400 hr.

TO SELECT OR ADJUST:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 02.
2. Press SET TIME/TEMP button once to display current selection of 1, 2, 3, 4, 5, 6, 7, 8, or 9 on large display. Factory default is 2.
3. Use up and down set point buttons to move between available choices.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 3 — English/Metric — Select between Fahrenheit and Celsius operation. Factory default is Fahrenheit.

TO SELECT OR ADJUST:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 03.
2. Press SET TIME/TEMP button once to flash current selection of F or C. Factory default is F.
3. Use up and down set point buttons to move between F and C on large display.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 4 — Fan (G) On With W — This selection determines whether fan (G) output is to be ON or OFF when any W (furnace or strip heat) output is ON. Most furnaces and fan coils manage their own blowers and do not require separate G signal. For these applications, select OFF. Some auxiliary heaters require separate G signal to turn on blower. In this case, select ON. Factory default is OF (off).

TO SELECT:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 04.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down set point buttons to alternate between OFF and ON on large display.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 9 — Holiday Heat Set Point — This selection determines the heating set point (40 to 90 minus deadband F) when the HOLIDAY function is active.

TO SELECT:

1. Enter Configuration mode. Use up and down buttons to make small display (now flashing) indicate 09.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down set point buttons to select desired temperature.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 10 — Holiday Cool Set Point — This selection determines the cooling set point (40 to 90 minus deadband F) when the HOLIDAY function is active.

TO SELECT:

1. Enter Configuration mode if not already there. Use up and down set point buttons to make small display (now flashing) indicate 10.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down set point buttons to select desired temperature.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 11 — Holiday Humidity Set Point — This selection determines the humidity set point (50 to 90% rh [relative humidity]) when the HOLIDAY function is active.

NOTE: This value can only be changed in the installer software Configuration mode.

TO SELECT:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 11.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down buttons to select desired humidity.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 13 — Room Temperature Offset Adjust — This option allows calibration (or deliberate miscalibration) of room temperature sensor. There are various reasons why building owners may want to have displayed temperature adjusted to a higher or lower value. The selected number is number of degrees, plus or minus, which will be added to actual temperature. The numbers can range between –5 and +5. Factory default is 0. This adjusted value will be used as actual temperature for both display and control action. For example, if

2 is selected, 72 F actual will read 74 F. If set point is 72 F, the room will control to an actual temperature of 70 F which will be displayed and acted upon as if it were 72 F. The effect is that a positive number selection will make the room temperature lower and vice versa. The Light Commercial Thermidistat is calibrated within an accuracy of plus or minus 1 degree when shipped from the factory, so this adjustment will provide the best accuracy when set to 0.

TO SELECT:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 13.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down set point buttons to move between –5, –4, –3, –2, –1, 0, 1, 2, 3, 4, or 5 on large display. Factory default is 0.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 14 — Heat/Cool Deadband Adjustment — This option selects the minimum difference between heating and cooling set points. A larger difference saves energy and a smaller difference decreases temperature difference between heating and cooling. Factory default is 2, which means cooling set point must be a minimum of 2 degrees above heating set point. An attempt to move them closer will result in one "pushing" the other to maintain the required difference.

Depending on set points, moving deadband closer than 2 degrees may result in regular cycling between heat and cool when AUTO mode is selected. However, this cycling cannot occur more often than 1 transition every 10 minutes. The system has a built-in requirement that it cannot switch between heat and cool without a 10-minute "off" time between the 2 operations. Specifically, to switch from one mode to the other, there must be no demand for the old mode and a demand for the new mode, and this must exist continually for 10 minutes before transition to the new mode will occur.

TO SELECT:

1. Enter Configuration mode if not already there. Use up and down set point buttons to make small display (now flashing) indicate 14.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up or down set point buttons to move between 0, 1, 2, 3, 4, 5, or 6 on large display. Factory default is 2.
4. Press SET TIME/TEMP button again to flash small upper display for selection of another option, or press HOLD End to exit Configuration mode.

Option 21 — Keyboard Lock — This option allows the installer to disable the thermostat from being changed.

TO SELECT:

1. Enter Configuration mode. Use up and down set point buttons to make small display (now flashing) indicate 21.
2. Press SET TIME/TEMP button once to flash large display.
3. Use up and down set point buttons to move between OF and ON on large display. Factory default is OF, keyboard is active.

   NOTE: Once the keyboard is locked the building manager can momentarily unlock the keyboard by pressing the following keys sequentially, MODE, COPY PREVIOUS DAY, SET TIME/TEMP, and HOLD End. The sequence must be completed within a 5-second period, and the keypad will be unlocked. The keypad will return to lock once the keypad is idle for a 2-minute period or immediately if after exiting the Configuration mode.
4. Press SET TIME/TEMP button again to flash upper small display for selection of another option, or press HOLD End to exit Configuration mode.

Step 5 — Conduct Light Commercial Thermidistat Start-Up and Checkout — The Light Commercial Thermidistat is designed with a built-in installer test capability. It allows easy operation of equipment without delays or set point adjustments to force heating or cooling. To enable Installer Test mode, move DIP switch no. 4 to ON position. To access this switch, open case as described in Step 2 — Set DIP Switches. Use the tip of a small screwdriver to slide switch no. 4 to ON position.

While in Installer Test mode, clock will display "InSt," FAN button will control fan, and MODE button will control heating and cooling.

TO TEST FAN:

NOTE: In the Installer Test mode the fan operation is not dependent on the occupied signal.

Fan button switches FAN icon between AUTO and ON. While ON is displayed, G output will be on, turning fan on. Allow up to 10 seconds after button is pressed for fan to turn on and off. On all 3 through 12.5 ton RTUs the fan continues to operate for a minimum of 30 seconds after G signal is removed.

NOTE: In other than the Installer Test mode the fan will run continuously during the occupied periods. If auto fan is selected, the fan will come on with a heating or cooling call during the unoccupied periods and run continuously during the occupied periods. The fan icon AUTO will be lit if auto fan is selected and ON will be lit when the fan is on.

TO TEST COOLING AND DEHUMIDIFICATION:

Press MODE button until COOL icon turns on. Y1 cooling begins within 10 seconds and remains on for 4 minutes. Two minutes after Y1 comes on, the Y2 signal is energized for 2 minutes. At the end of 4-minute run, cooling stops and MODE reverts to OFF. At any time during 4-minute run time, cooling may be turned off by pressing MODE button until OFF appears. While cooling is on, successive presses of HUMIDITY button turns the dehumidify output on and off. While this output is active, the "DEHUM" icon will be energized.

TO TEST PRIMARY HEATING:

Press MODE button until HEAT icon turns on. W1 heating begins within 10 seconds and remains on for 4 minutes. This is the Recycling mode and if the outdoor temperature is below the balance point it will also include first stage furnace or electric heat in AC system, and heat pump heating in heat pump system. W1 will be on for 2 minutes followed by second stage W2 for 2 minutes. If the outdoor temperature is above the balance point, this second stage call will energize first stage furnace or electric heat in AC system and heat pump heating in heat pump system. If the outdoor temperature is below the balance point this second stage call will energize second stage furnace or electric heat in AC system and heat pump system. At the end of 4-minute run, heating stops, and MODE reverts back to OFF. At any time during 4-minute run time, heating may be turned off by pressing MODE button until OFF appears. While heating is on, successive presses of HUMIDITY button turn Occupied output on and off. While this output is active, "OC" appears in cool set point display.

Step 6 — Make Final Settings — Be sure to return DIP switch no. 4 back to OFF position to exit Installer Test mode. Assuming the system is to be left in operation after installation is complete, use MODE button to select between HEAT, COOL, or AUTO to provide desired operation of heating, cooling, or both.

The default set points and programmed schedule are (ONLY ONE PERIOD IS PROGRAMMED):

OCCUPIED 1 = OCCUPIED 2 = 7:00 AM;
COOL = 76 F; HEAT = 72 F
DISPLAY WILL READ OC2

UNOCCUPIED 1 = UNOCCUPIED 2 = 5:00 PM;
COOL = 85 F; HEAT = 65 F
DISPLAY WILL READ UN2

If programmed schedule is to be used, make sure the HOLD icon is off. The schedule is energized or deenergized by pushing the HOLD End button.

If fixed temperatures are desired, push HOLD End button to turn on HOLD icon. This will maintain set points, not allowing them to change with programmed schedule.

During unoccupied periods the FAN button may be used to select between AUTO (fan on only with equipment) and FAN (fan on continuously) fan modes. During occupied periods the fan is on continuously.

DEHUMIDIFICATION — Dehumidification is done only during cooling. A dehumidification set point is available to the owner in both occupied and unoccupied times. It can range from 50 to 90 percent relative humidity. When actual humidity is higher than set point, a dehumidification demand exists. In the occupied period, the Light Commercial Thermidistat responds by activating its dehumidify output (DEHUM) turning on the compressor in the Energy$Recycler2 unit; and when a call for cooling exists, energizing the MoistureMi$er™ solenoid in the 48/50HJ unit (if so equipped). The Energy$Recycler2 compressor will be started in the Occupied mode even though a call for cooling does not exist; thus dehumidifying the outside air before it enters the building. In the unoccupied period the humidistat will only energize the MoistureMi$er solenoid in the main unit.

However, if the humidity is below the set point in the unoccupied period, a "mini" economizer mode will be initiated bringing in outside air to cool the space as the first stage of cooling, provided the outdoor air thermostat in the Energy$Recycler2 unit is below its set point.

HOLIDAY — A holiday selection is available specifically for times where the building will not be occupied for an extended period. For convenience, one button selects Holiday mode which is indicated by "HOLIDAY" icon on LED display. Holiday mode also has an automatic hold, meaning that set points are not affected by the programmed schedule. While in Holiday mode, the system provides temperature and humidity protection for the building in all seasons, but not comfort.

Holiday Set Points — The settings for HEAT, COOL, and DEHUM should have been done in the Configuration mode (Options 9,10, and 11).

OPERATIONAL INFORMATION

Five-Minute Compressor Time Guard® Device — This timer prevents compressor from starting unless it has been off for at least 5 minutes. It can be defeated for 1 cycle by simultaneously pressing FAN and UP buttons simultaneously.

Fifteen-Minute Staging Timer — In multistage heating or cooling, this timer prevents any higher stage from turning on until preceding stage has been on for 15 minutes. This timer is not in effect if temperature difference is greater than 5° F (usually due to a large change in desired temperature).

Three-Minute Minimum On Time — In normal operation, when a stage turns on, it will not turn off for a minimum of 3 minutes.

Heat/Cool Set Points (Desired Temperature) — A minimum difference of 2° F is enforced between heating and cooling desired temperatures. This is done by allowing one setting to "push" the other to maintain this difference. This difference is adjustable via Configuration Option 14.

Equipment On Indicators — When cooling equipment is on, a COOL icon preceded by a small triangle is displayed below cooling set point. While cooling equipment is delayed by the Time Guard timer, triangle will flash. The same is true for HEAT icon and its preceding triangle located under heating set point.

Dehumidify Output On Indicators — The DEHUM icon is on when the dehumidification output is energized.

Auto Changeover — When auto changeover mode is selected, a change from heat to cool (or vice versa) will not occur until an opposite mode demand has existed for 10 minutes. If set point is changed, the 10-minute requirement is deleted.

Power On Check — When AC power is first applied, all segments of display are turned on for a few seconds. Following this, temperature display indicates model/configuration via following 2-digit code: CP for commercial product. See Fig. 16.

Error Codes — If Light Commercial Thermidistat cannot properly read room temperature, display will indicate two dashes (--) and all outputs (except fan, if on) will turn off.

E4 — If Light Commercial Thermidistat's internal memory fails, "E4" will be displayed. Replace Light Commercial Thermidistat.

E5 — If Light Commercial Thermidistat cannot properly read humidity, "E5" will be displayed. Replace Light Commercial Thermidistat.

Smart Recovery — With Smart Recovery selected (DIP SW1 is on), transition out of setback begins a fixed time period before selected recovery time and gradually adjusts room temperature so desired temperature will be achieved at selected recovery time. The fixed time period is 1.5 hours. It operates in both heating and cooling.

PRE-START-UP

⚠ WARNING

Failure to observe the following warnings could result in serious personal injury.

1. Follow recognized safety practices and wear protective goggles and gloves when checking or servicing refrigerant system.
2. Do not operate compressor or provide any electric power to unit unless compressor terminal cover is in place and secured.
3. Do not remove compressor terminal cover until all electrical sources are disconnected and tagged accordingly.
4. Relieve all pressure from system before touching or disturbing any connections inside compressor terminal box. If refrigerant leak is suspected around compressor terminals, use accepted methods to recover refrigerant.
5. Never attempt to repair or solder any components while refrigerant system is under pressure.
6. Do not use torch to remove any component. System contains oil and refrigerant under pressure. To remove a component, wear protective goggles and gloves and proceed as follows:
   a. Shut off electrical power to unit and tag disconnect.
   b. Recover refrigerant to relieve all pressure from system, using both high- and low-pressure ports.
   c. Cut component connection tubing with tubing cutter, and remove component from unit.
   d. Carefully unsweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame.

Refer to 48/50HJ Installation Instructions for Pre-Start-Up information for the rooftop unit section. Proceed as follows to inspect and prepare the unit for initial start-up:

1. Remove filter access panel, blower access panel, and control panel access cover on the energy recovery section.
2. Read and follow instructions on all WARNING, CAUTION, and INFORMATION labels attached to (or shipped with) unit.
3. Make the following inspections:
   a. Inspect for shipping or handling damages such as broken lines, loose parts, or disconnected wires.
   b. Inspect for oil at all refrigerant tubing connections and on unit base. Detecting oil usually indicates a refrigerant leak. Leak-test all refrigerant tubing connections using an electronic leak detector, halide torch, or liquid-soap solution.
   c. Inspect all field and factory wiring connections Be sure that connections are completed and tight.
   d. Inspect upper (supply) and lower (exhaust) coils for damage and refrigerant leaks. If fin damage is noted, carefully straighten fins using a fin comb.
4. Tighten compressor holddown bolts to 5.5 to 6.5 ft-lbs of torque.
5. Verify the following:
   a. If installed, ensure optional supply and exhaust blower wheel set screws are tight and wheels are centered within the blower housing.
   b. Make sure supply and exhaust air filters are in place.
   c. Make sure the condensate drain is of correct dimensions and primed with water to ensure proper drainage.
   d. Reinstall all access panels.
   e. Ensure all tools and miscellaneous parts have been removed.

START-UP

Refer to the 48/50HJ Installation Instructions for information on Start-Up for the rooftop unit section.

Unit Preparation — Make sure the unit has been installed in accordance with installation instructions and applicable codes.

Supply and Exhaust Filters — Make sure filters are correctly installed on unit. Do not operate without filters in place.

Outdoor-Air Inlet Screens — Outdoor-air inlet screen(s) must be in place before operating the unit.

Compressor Mounting — Compressors are internally spring-mounted. Ensure wooden shipping block has been removed from under the compressor and holddown bolts are in place.

Internal Wiring — Check all low and high voltage connections for proper locations. Ensure connections are tight.

Cooling — Set Light Commercial Thermidistat mode selection to Cooling and fan mode to Auto. Ensure thermostat has been adjusted to a setting below room temperature. Refer to Table 2 for correct unit operation.

Heating — Set Light Commercial Thermidistat mode selection to Heating and fan mode to Auto. Ensure thermostat has been adjusted to a setting below room temperature. Refer to Table 2 for correct unit operation.

Operating Sequence — Refer to Step 5 — Conduct Light Commercial Thermidistat Start-Up and Checkout on page 33, and Table 2 for energy recovery section operating sequence. See Fig. 17.

SERVICE

Refer to base unit installation instructions or 62AQ Installation Instruction for all service information.

Fuse Box (48HJ012,014 — 208/230-3-60 Units Only) — Certain 48HJ units contain a fuses for the power supply. The fuse box is located in the compressor section in a single point box. See Fig. 18. Replacement fuses are cartridge type, non-renewable, time delay FRN type of the appropriate size and voltage. Refer to existing fuse size and voltage for replacement.

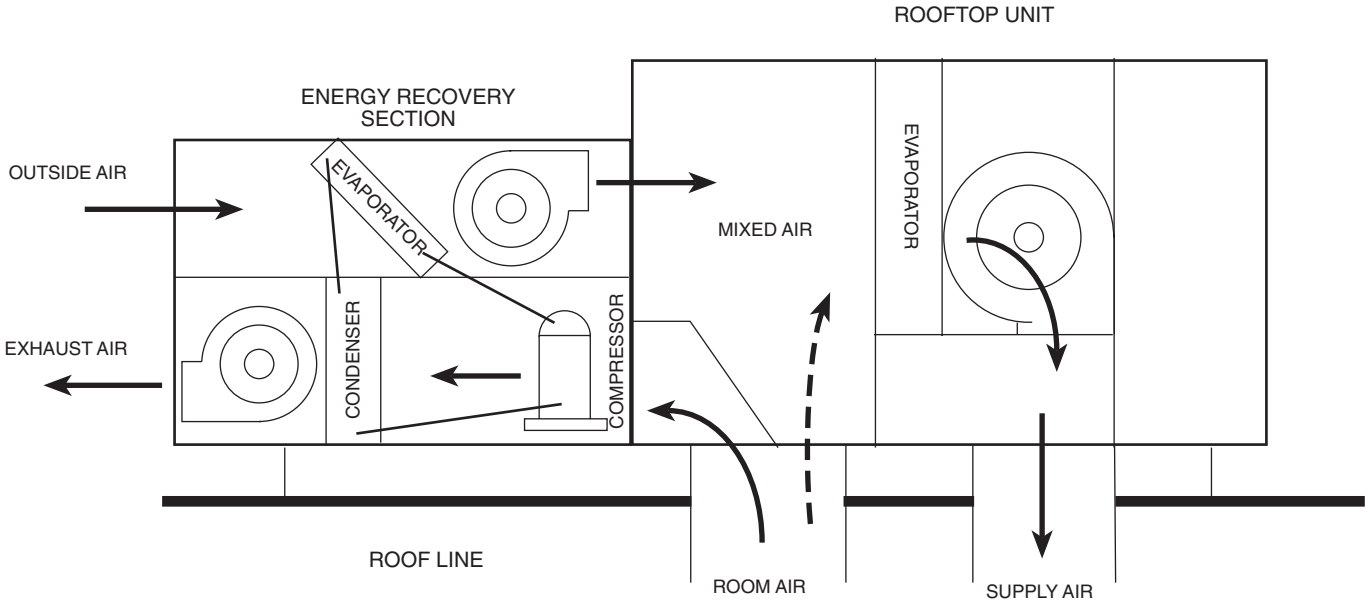


Fig. 17 — Unit Operation Flow Diagram

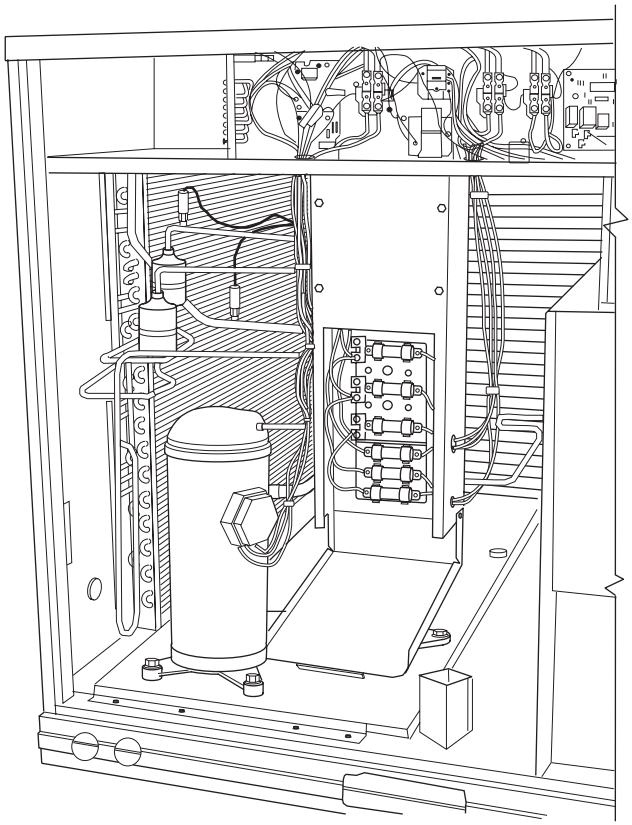


Fig. 18 — Fuse Box (48HJ012, 014 — 208/230-3-60 Units Only)

Table 2 — Light Commercial Thermidistat (LCT) Operating Sequence and System Response

UNOCCUPIED

COOLING	ER Comp	ER Fans	RT Comp 1	RT Comp 2	RT Fans	RT Heat
Indoor Temperature Above 2nd Stage Set Point						
Humidity Low & OAT Low	On	On (cyc.)	On w/o MM	Off	On (cyc.)	Off
Humidity Low & OAT High	Off	Off	On w/o MM	w/o MM	On (cyc.)	Off
Humidity High & OAT Low	Off	Off	On w MM	On w MM	On (cyc.)	Off
Humidity High & OAT High	Off	Off	On w MM	On w MM	On (cyc.)	Off
Indoor Temperature Between 1st and 2nd Stage Set Points						
Humidity Low & OAT Low	Off	On (cyc.)	Off	Off	On (cyc.)	Off
Humidity Low & OAT High	Off	Off	On w/o MM	Off	On (cyc.)	Off
Humidity High & OAT Low	Off	Off	On w MM	Off	On (cyc.)	Off
Humidity High & OAT High	Off	Off	On w MM	Off	On (cyc.)	Off
Indoor Temperature Below 1st Stage Set Point	Off	Off	Off	Off	Off	Off

NOTE: OAT < 55° all compression off*

HEATING	ER Comp.	ER Fans	RT Comps.	RT Fans	RT Heat	
Indoor Temperature Above 1st Set Point	Off	Off	Off	Off	Off	
Indoor Temperature Between 1st and 2nd Stage Set Points	Off	Off	Off	On (cyc.)	On, 50%	
Indoor Temperature Below 2nd Stage Set Point	Off	Off	Off	On (cyc.)	On, 100%	

OCCUPIED

COOLING	ER Comp	ER Fans	RT Comp 1	RT Comp 2	RT Fan	RT Heat
Indoor Temperature Above 2nd Stage Set Point						
Humidity Low & OAT Low	On	On	On w/o MM	On w/o MM	On	Off
Humidity Low & OAT High	On	On	On w/o MM	On w/o MM	On	Off
Humidity High & OAT Low	On	On	On w MM	On w MM	On	Off
Humidity High & OAT High	On	On	On w MM	On w MM	On	Off
Indoor Temperature Between 1st and 2nd Stage Set Points						
Humidity Low & OAT Low	Off	On	Off	Off	On	Off
Humidity Low & OAT High	On	On	On w/o MM	Off	On	Off
Humidity High & OAT Low	On	On	On w MM	Off	On	Off
Humidity High & OAT High	On	On	On w MM	Off	On	Off
Indoor Temperature Below 1st Stage Set Point						
Humidity Low	Off	On	Off	Off	On	Off
Humidity High	On	On	Off	Off	On	Off

NOTE: OAT < 55° all compression off*

HEATING	ER Comp	ER Fans	RT Comps	RT Fans	RT Heat	
Indoor Temperature Above 1st Stage Set Point	Off	On	Off	On	Off	
Indoor Temperature Between 1st and 2nd Stage Set Points						
OAT >Set Pt	On	On	Off	On	Off	
OAT <Set Pt	On	On	Off	On	On, 50%	
Indoor Temperature Below 2nd Stage Set Point						
OAT >Set Pt	On	On	Off	On	On, 50%	
OAT <Set Pt	On	On	Off	On	On, 100%	

LEGEND

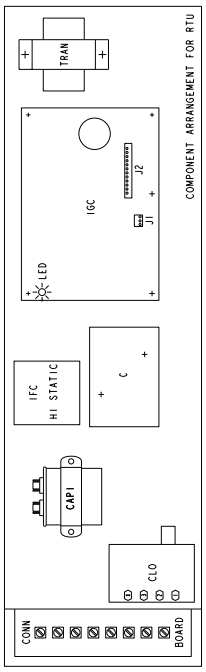
Comp — Compressor
ER — Energy Recovery section
MM — MoistureMi$er™ Dehumidification Device
OAT — Outdoor-Air Temperature
RT — Rooftop Unit
Set Pt — Set Point

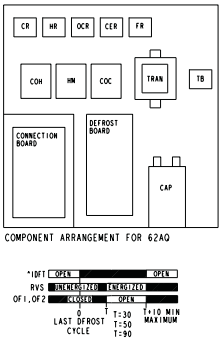
*Unless unit compressor has been rewired as described in Step 11 (page 29).

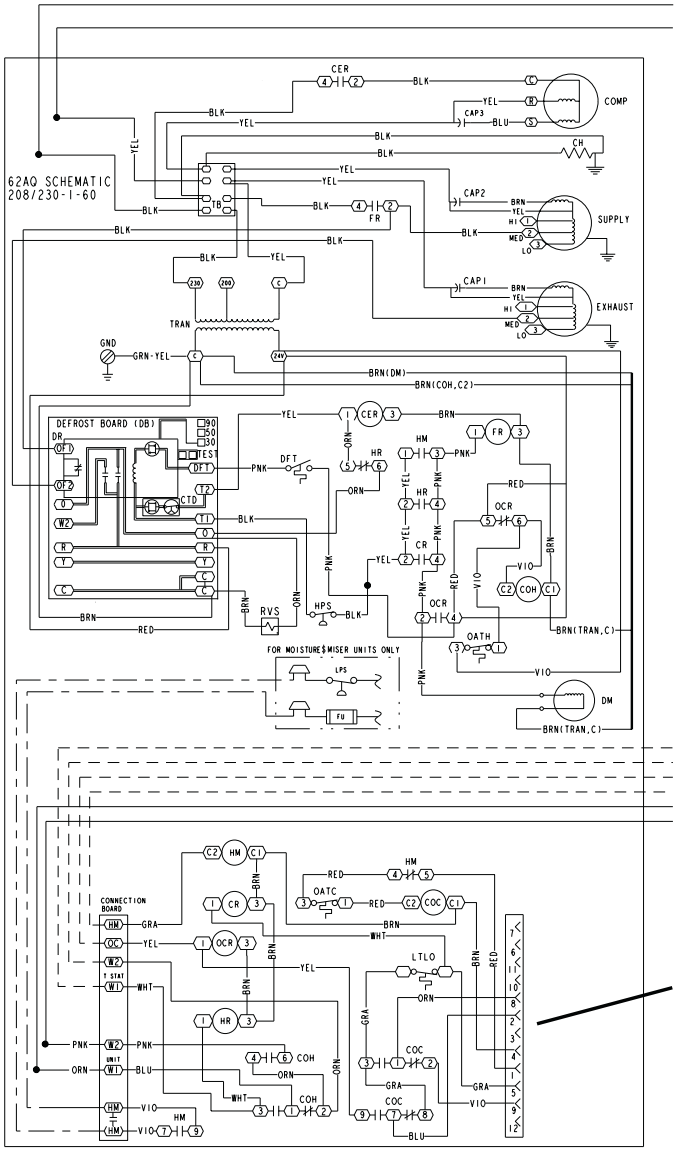
TROUBLESHOOTING

Use Tables 3 and 4, and Fig. 19 and 20 when troubleshooting this unit.

NOTES:
1. If any of the original wire furnished must be replaced, it must be replaced with Type 90° C wire or its equivalent.
2. Three phase motors are protected under primary single phasing conditions.
3. Thermostat: HH07AT170, 172.
   Subbase: HH93AZ176, 177, 178, and 179.
4. Set heat anticipator at .14 amp for 1st stage and .14 amp for 2nd stage.
5. Use copper conductors only.
6. TRAN is wired for 230-v unit. If unit is to be run with 208-v power supply, disconnect BLK wire from 230-v tap (ORN) and connect to 208-v tap (RED). Insulate end of 230-v tap.

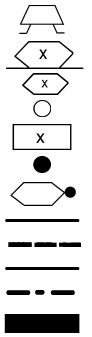






LEGEND

C	—	Contactor
CAP	—	Capacitor
CER	—	Compressor Energy Recovery section
CH	—	Crankcase Heater
CLO	—	Compressor Lockout
COC	—	Cool Changeover Relay
COH	—	Heat Changeover Relay
COMP	—	Compressor Motor
CR	—	Cooling Relay
CTD	—	Compressor Time Delay
DB	—	Defrost Board
DFT	—	Defrost Thermostat
DM	—	Damper Motor
DR	—	Defrost Relay
EQUIP	—	Equipment
FPT	—	Freeze-Up Protection Thermostat
FR	—	Fan Relay
FU	—	Fuse
GND	—	Ground
HM	—	Humidity Relay
HPS	—	High-Pressure Switch
HR	—	Heating Relay
HS	—	Hall Effect Sensor
I	—	Ignitor
IDM	—	Induced Draft Motor
IFC	—	Indoor Fan Contactor
IFM	—	Indoor Fan Motor
IGC	—	Integrated Gas Unit Control (48HJ only)
LTLO	—	Low Temp Cooling Lockout
LPS	—	Low-Pressure Switch
LS	—	Limit Switch
MGV	—	Main Gas Valve
OATC	—	Outdoor-Air Thermostat (Cool)
OATH	—	Outdoor-Air Thermostat (Heat)
OCR	—	Occupied Relay
OF	—	Outdoor Fan
OFM	—	Outdoor Fan Motor
OLR	—	Overload Relay
PL	—	Plug Assembly
QT	—	Quadruple Terminal
RS	—	Rollout Switch
RVS	—	Reversing Valve Solenoid
SEN	—	Sensor
TB	—	Terminal Block
TRAN	—	Transformer



Field Splice
Marked Wire
Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Splice
Splice (Marked)
Factory Wiring
Field Control Wiring
Field Power Wiring
Accessory or Optional Wiring
To indicate common potential only. Not to represent wiring.

Fig. 19 — Typical Wiring Schematic (Standard Controls)

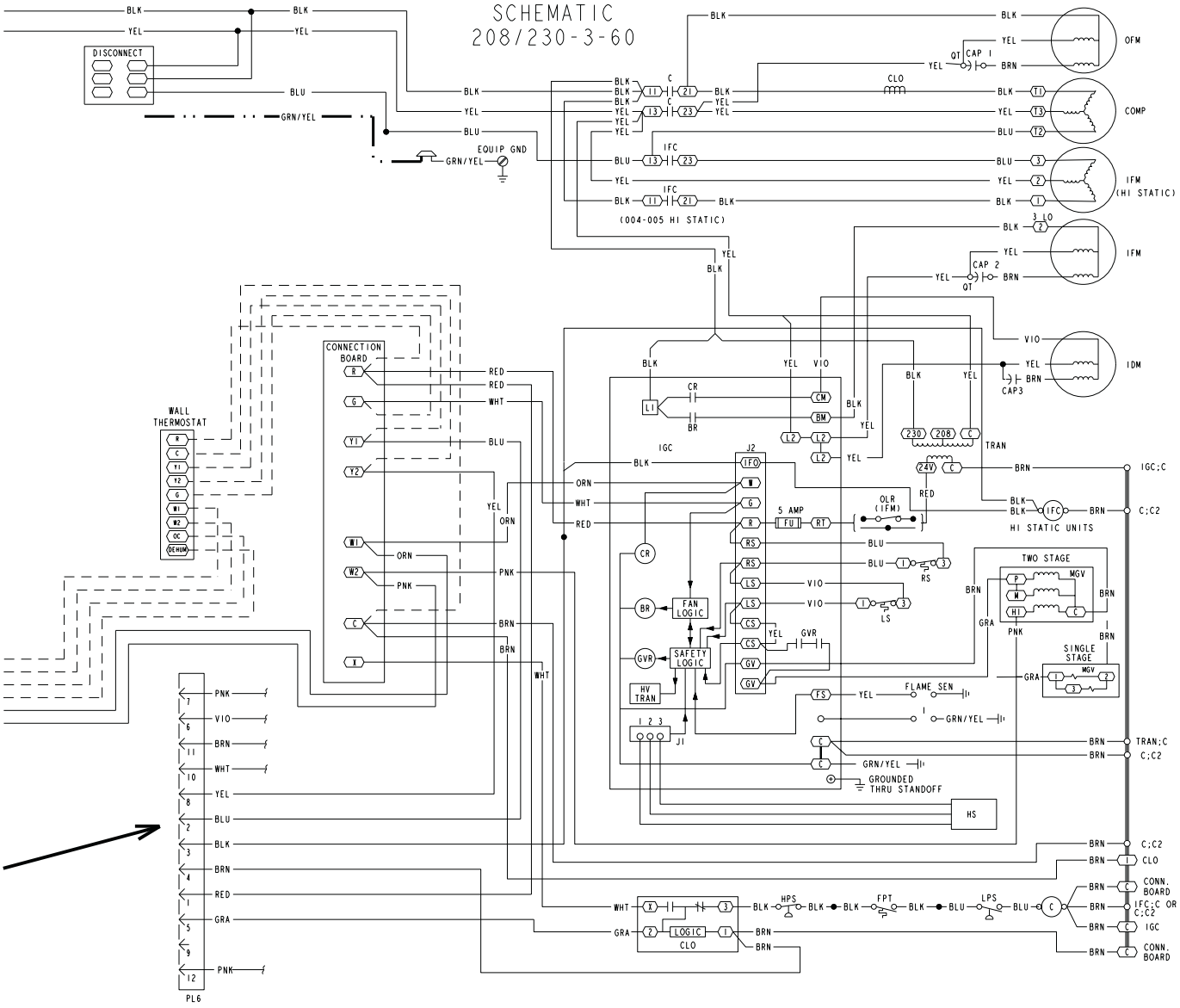
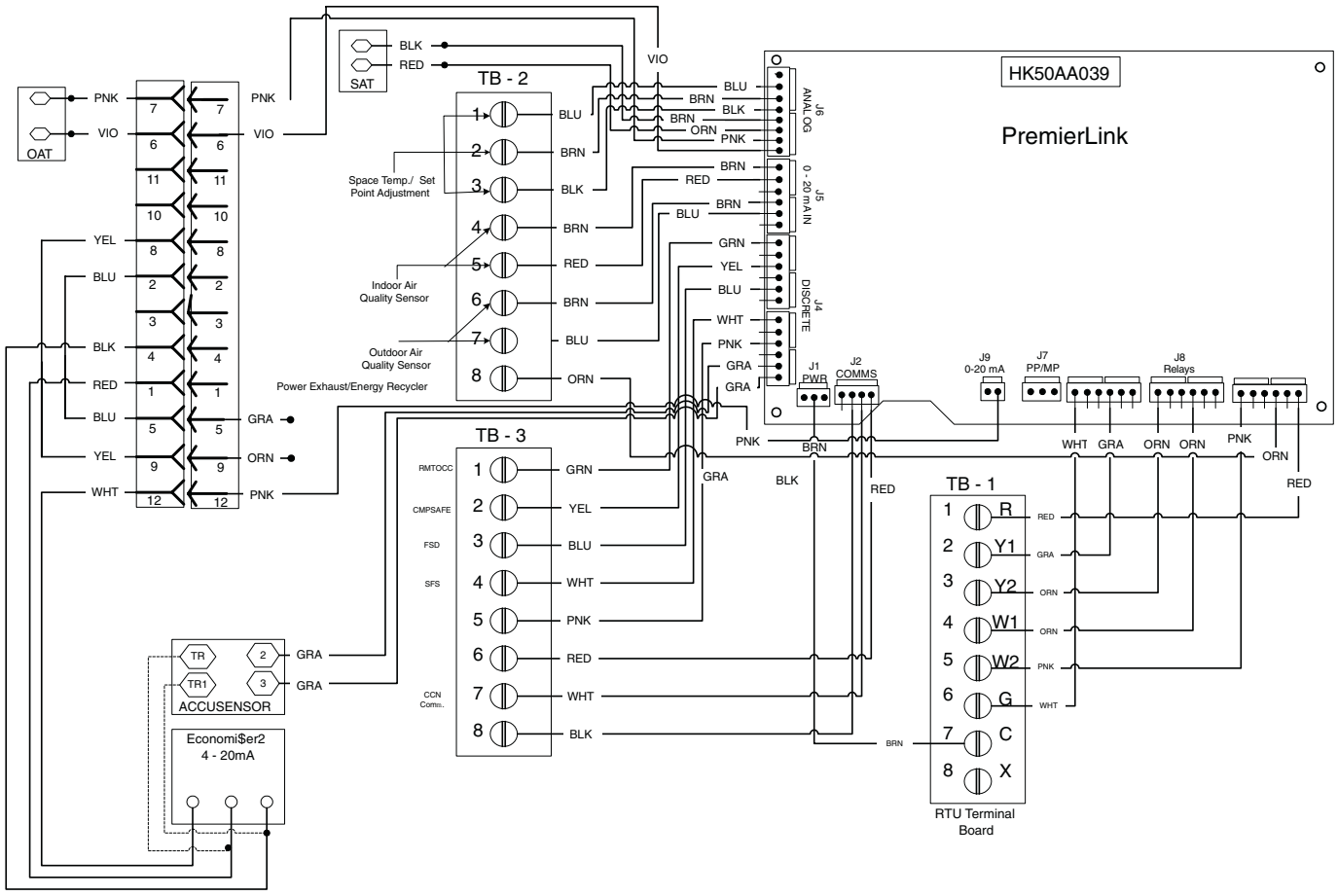


Fig. 19 — Typical Wiring Schematic (Standard Controls) (cont)



LEGEND

COMMS — Communications
OAT — Outdoor Air Temperature Sensor
PWR — Power
SAT — Supply Air Temperature Sensor

Fig. 20 — Typical Wiring Schematic (with PremierLink™ Controls)

Table 3 — Heating and Cooling Troubleshooting

PROBLEM	CAUSE	REMEDY
Compressor and outdoor fan will not start.	Power failure.	Call power company.
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, control relay, or capacitor.	Replace component.
	Insufficient line voltage.	Determine cause and correct.
	Incorrect or faulty wiring.	Check wiring diagram and rewire correctly.
	Light Commercial Thermidistat program in UC1 or UC2 mode.	Check Light Commercial Thermidistat program. See Step 5 — Conduct Light Commercial Thermidistat Start-Up and Checkout on page 33.
	Defective fan motor.	Replace fan motor.
Compressor will not start but outdoor fan runs.	Faulty wiring or loose connection in compressor circuit.	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open.	Determine cause. Replace compressor.
	Defective run/start capacitor, overload, start relay, Time Guard® device.	Determine cause and replace.
	No DEHUM signal from Light Commercial Thermidistat.	Check for DEHUM signal on Light Commercial Thermidistat LCD display.
	Time Guard device not timed out.	Allow time for Time Guard device to recycle unit.
Compressor cycles (other than normally satisfying thermostat).	Refrigerant overcharge or undercharge.	Recover refrigerant, evacuate system, and recharge to nameplate.
	Defective compressor.	Replace and determine cause.
	Insufficient line voltage.	Determine cause and correct.
	Blocked outdoor coil or dirty air filter.	Determine cause and correct.
	Defective run/start capacitor, overload, or start relay.	Determine cause and replace.
	Faulty outdoor-fan (cooling) or indoor-fan (heating) motor or capacitor.	Replace.
	Restriction in refrigerant system.	Locate restriction and remove.
Suction pressure greater than 100 psig in Cooling mode.	Defective TXV.	Replace TXV.
Excessive head pressure.*	Dirty air filters.	Replace filters.
	Dirty coils.	Clean coils.
	Refrigerant overcharged.	Recover excess refrigerant.
	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condensing air restricted or air short-cycling.	Determine cause and correct.
Head pressure too low.*	Low refrigerant charge.	Check for leaks; repair and recharge.
	Compressor valves leaking.	Replace compressor.
	Restriction in liquid tube.	Remove restriction.
Excessive suction pressure.*	High heat load.	Check for source and eliminate.
	Compressor valves leaking.	Replace compressor.
	Refrigerant overcharged.	Recover excess refrigerant.
Suction pressure too low.*	Dirty air filters or coils.	Replace filter, clean coils.
	Low refrigerant charge.	Check for leaks; repair and recharge.
	Metering device or low side restricted.	Remove source of restriction.
	Insufficient indoor airflow.	Increase air quantity. Check filter and replace if necessary.

LEGEND

TXV — Thermostatic Expansion Valve

*Energy recovery section uses TXVs with a 100 psig maximum operating pressure (MOP) feature to limit suction pressure in Cooling mode at high temperatures. Always consult charging chart for correct operating pressures.

Table 4 — Supply-Air Damper Troubleshooting

PROBLEM	CAUSE	REMEDY
Damper does not open; fan(s) off.	OCR not energized (thermostat in Unoccupied mode).	Check Light Commercial Thermidistat program settings (see Step 5 — Light Commercial Thermidistat Start-Up and Checkout section, page 33).
	OCR defective.	Replace OCR.
	Damper jammed.	Free damper.
	Damper motor defective.	Replace damper motor.
	Loose wiring.	Check wiring and correct.
Damper will not close.	Damper jammed.	Free damper.
	Motor return spring broken.	Replace motor.

LEGEND

OCR — Occupied Relay

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ROOFTOP UNIT (RTU) AND ENERGY RECOVERY SECTION (62AQ) START-UP CHECKLIST

(Remove and Store in Job File)

I. PRELIMINARY INFORMATION

RTU **62AQ**

COBRA™ ENERGY RECOVERY UNIT MODEL NO.: _____ SERIAL NO.: _____/_____

BASE UNIT MODEL NO.: _____ SERIAL NO.: _____/_____

DATE: _____ TECHNICIAN: _____/_____

II. PRE-START-UP (insert checkmark in box as each item is completed)

- ☐ VERIFY THAT CONDENSATE CONNECTION IS INSTALLED PER INSTALLATION INSTRUCTIONS
- ☐ CHECK ALL ELECTRICAL CONNECTIONS AND TERMINALS FOR TIGHTNESS
- ☐ CHECK THAT SUPPLY AND EXHAUST HOODS ARE INSTALLED AND AIR FILTER(S) ARE CLEAN AND IN PLACE
- ☐ CHECK FAN WHEEL AND PROPELLER FOR LOCATION IN HOUSING/ORIFICE AND SETSCREW TIGHTNESS
- ☐ CHECK PULLEY ALIGNMENT AND BELT TENSION PER INSTALLATION INSTRUCTIONS (62AQ300 BELT DRIVE EXHAUST FAN AND SUPPLY FAN)

III. START-UP

COMBINED ELECTRICAL (COBRA ENERGY RECOVERY UNIT)

SUPPLY VOLTAGE	L1-L2	_____	L2-L3	_____	L3-L1	_____
COMPRESSOR AMPS	L1	_____	L2	_____	L3	_____
INDOOR FAN AMPS	L1	_____	L2	_____	L3	_____

TEMPERATURES

OUTDOOR-AIR TEMPERATURE	_____	DB	_____	WB
RETURN-AIR TEMPERATURE	_____	DB	_____	WB
ENTERING SUPPLY-AIR (RTU)	_____	DB	_____	WB
LEAVING AIR TEMPERATURE (RTU)	_____	DB	_____	WB

PRESSURES (IN COOLING MODE)

ROOFTOP UNIT

REFRIGERANT SUCTION	_____	PSIG	TEMP AT COMPRESSOR	_____	F
REFRIGERANT DISCHARGE	_____	PSIG	TEMP AT COMPRESSOR	_____	F

- ☐ VERIFY REFRIGERANT CHARGE USING CHARGING CHART LABEL ON UNIT.

62AQ

REFRIGERANT SUCTION	_____	PSIG	TEMP AT COMPRESSOR	_____	F
REFRIGERANT DISCHARGE	_____	PSIG	TEMP AT COMPRESSOR	_____	F

- ☐ VERIFY REFRIGERANT CHARGE USING CHARGING CHART LABEL ON UNIT.

III. START-UP (cont)

AIRFLOWS (62AQ)

SUPPLY AIR _____ CFM

MOTOR SPEED (Circle One) LOW MEDIUM HIGH

DAMPER SETTING (°) (Circle One) 30 45 60 90

EXHAUST AIR _____ CFM

MOTOR SPEED (Circle One) LOW MEDIUM HIGH

DAMPER SETTING (°) (Circle One) 30 45 60 90

IV. LIGHT COMMERCIAL THERMIDISTAT ACCESSORY

NOTE: To disable Keyboard Lock, press MODE, COPY PREVIOUS DAY, SET TIME/TEMP, and HOLD End buttons in sequence within 5 seconds.

PROGRAMMED _____ Yes _____ No
KEYBOARD LOCK _____ Yes _____ No

OCCUPIED SETTINGS:

ROOM TEMP _____ F
ROOM RH _____ %

TIMES:	ON	OFF
OC1		
OC2		

TIMES:	ON	OFF
UC1		
UC2		

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

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